PYE BANK COMPUTING PROGRESSION OVERVIEW

Year Group	Computer Systems and Networks	Programming	Data and Information	Creating Media
FS	**FS.1: What is a computer?** • Identify the main parts of a computer. • To be able to use a mouse to move the arrow around a screen with purpose. • To be able to use a mouse to click an item on the screen. • To be able to use a keyboard to press letters and attempt typing. • To investigate a computer-How do you turn it on? How do you change the volume or open up an application? • Discuss common technology in the home, school, and wider world.	**FS.2: Do computers have a brain?** • To understand that computers only follow instructions that we give them. • To explore computers to find out what they do- and use Bee-Bots as a way to do this. • To explore cause and effect programs or applications on a computer. • To repeat an action with technology to trigger a specific outcome.	**FS.3: How do I stay safe online?** • To understand why we do not share our personal information online. • To understand that people can deceive and conceal identities online. • To understand why it is important to be kind online. • Use 'Smartie the Penguin' stories to explore how to make safe choices online an whilst using different forms of technology.	**FS.4: What kind of art can I make on a computer?** • To use the Paint Application to explore how to create art, using Paint tools. • To communicate to an adult and/or peers about what it is that I have created. • To explore applications which allow me to listen to and create music. • To explore a photo-taking application and talk about how I captured the photograph. • To value their own and others artwork
Year 1	**1.1: How do I use a school computer independently?** • Identify a range of technology and different digital devices. • Identify a computer and its main parts and explain what they are used for. • Use a mouse in different ways • Use a keyboard to type and edit text • Understand how to use a computer responsibly	**1.2a: What is an algorithm?** • Understand that algorithms are made up of instructions and that the order of these instructions is important. • Predict the outcome of a command on a device, match a command to an outcome and run a command on a device. • Combine forwards and backwards commands to make a sequence. • Combine four direction commands to make sequences including, left right and turns. • Plan a simple program and debug a program on a floor robot and online software. • Find more than one solution to a problem. **1.2b: What is a program?** • Understand that computers are controlled by humans and that we program computers to make them do things by giving them instructions. • Choose a command for a given purpose e.g. movement. • Understand that a series of commands can be joined together.		**1.4a: How can I create a piece of writing on the computer?** • Use a computer to write by opening a word processor and identifying keys on a keyboard. • Add and remove text on a computer incuse letter, number, and space keys and backspace to remove text. • Identify that the look of text can be changed on a computer through capital letters the use bold, italic, and underline. • Make careful choices when changing text by changing the font. • Explain why I used the tools that I chose and decide if changes have improved writing also use 'undo' to remove changes. **1.4b: How can I create a piece of art work using the computer?** • Make marks, draw lines and use paint tools to draw a picture explaining which tools used. • Make dots of colour on the page and change the colour and brush sizes.

		• Identify the effect of changing a value by using number blocks. • Explain that each sprite has its own instructions. • Create an algorithm to run a program.		• Use the shape tool and the line tools to recreate the work of an artist (Modrin). • Make careful choices when painting a digital picture by choosing appropriate shapes, colour choices and recreating in the style of an artist. • Independently use a computer to paint a picture. **1.4c: How can I use text and images together?** • Understand that you can edit and change digital content (the appearance of text). • Select basic options to change the appearance of digital content (making text bold, italics, underline, size, colour and style). • Apply simple edits to digital content to achieve a particular effect (change the font of text for a reason) • Insert appropriate images from a selection to accompany text. • Save and use digital images found online to accompany text. • Change the size of an image.
Year 2	**2.1: How do digital devices help us?** • Recognise the uses and features of information technology in the world around us • Understand how technology in the home, school and wider world is used and how it benefits us. • Recognise and use a range of output devices, e.g. printer, speakers, monitor/screen • Recognise that a range of devices contain computers e.g. washing machines, cars ect. • Understand how to use technology safely • Understand that all devices, programs, websites, apps and games are designed, manufactured and programmed by real people to fulfil specific tasks.	**2.2: How do I improve my algorithm and debug it?** • Understand that a sequence of commands has a start and can identify where the start is and how to run a program. • Predict the outcome of a sequence of commands, match two sequences with the same outcome and can change the outcome of a sequence of commands by altering the program. • Create a program using a given design by demonstrating an understanding of the actions of a sprite in an algorithm, deciding which blocks to use to meet the design and building the sequences of blocks needed.	**2.3: How do I group and sort data on a computer (Pictograms and branching data bases)?** • Use a computer program to present information in different ways. • Create a pictogram using a computer program and draw conclusions from it. • Create questions with yes/no answers. • Create a branching database using a computer program and draw conclusions from it. • Save and print work.	**2.4a: How can I use a computer to create music?** • Explain how music can make us feel • Identify that there are patterns in music • Create a rhythm pattern on the computer. • Describe how music can be used in different way. • Use a computer to experiment with pitch and duration. • Show how music is made from a series of notes. • Use a computer to create a musical pattern using three notes. • Refine a musical pattern on a computer. • Create music for a purpose

		• Edit and change a given design through backgrounds, characters and creating a new program. • Independently create a program using their own designs by choosing images, creating algorithms and building sequences. • Evaluate a project and decide how it project can be improved • Debug and improve sequences throughout the projects they create.		• Explain choices that have been made and save work. **2.4b: How can I capture, edit and improve a photograph?** • Know what devices can be used to take photographs. • Use a digital device to take a photograph. • Explain the process of taking a good photograph and describe what makes a good photograph. • Take photos in both landscape and portrait format choosing which is the most appropriate. • Decide how photographs can be improved. • Explore the effect that light has on a photo. • Focus on an object. • Use tools to change an image • Recognise that images can be changed. • Apply a range of photography skills to capture a photo. **2.4c: How can I present text and images to an audience?** • Select and insert text and images to present information on a topic. • Apply more advanced edits to digital content to achieve a particular effect (word art, borders on pictures) • Edit background colours and designs to achieve a particular effect. • Evaluate multimedia show and edit their own content to improve it according to feedback. • Present multimedia show to an audience.
Year 3	**3.1: How are digital devices connected?** • Explain how digital devices function • Identify input and output devices	**3.2a: How can I program music using Scratch?** • Explore a new programming environment (Scratch)		**3.4a: What makes a great animation?** • Explain that animation is a sequence of drawings or photographs.

	• Recognise how digital devices can change the way we work • Explain how a computer network can be used to share information • Explore how digital devices can be connected • Recognise the physical components of a network	• identify the objects in a Scratch project (sprites, backdrops) and recognise that commands in Scratch are represented as blocks • Identify that each sprite is controlled by the commands I choose. • Explain that a program has a start and can be started in different ways. • Create a sequence of connected commands, explaining what a sequence is and that it needs to have an order. • Create a program to move a sprite in four directions. • Change the appearance of my project by adding in multiple sprites and deciding the actions for each of them. • Create a project from a task description or following a design and starting to be able to do this with increasing independence. **3.2b: How do I use repetition and loops to create shapes?** • Identify that accuracy in programming is important • Create a program in a text-based language (using Logo) • Write an algorithm to produce a given outcome • Explain what 'repeat' means • Identify patterns in a sequence, eg 'step 3 times' means the same as 'step, step, step' • Use a count-controlled loop to produce a given outcome • Modify a count-controlled loop to produce a given outcome • Identify the effect of changing the number of times a task is repeated • Predict the outcome of a program containing a count-controlled loop and choose which values to change in a loop • Decompose a program into parts		• Relate animated movement with a sequence of images. • Predict what an animation will look like. • Explain why little changes are needed for each frame. • Plan and create an animation. • Identify the need to work consistently and carefully. • Use onion skinning to help make small changes between frames. • Review and improve an animation based on feedback. • Add other media to the animation (music and text). • Evaluate the impact of adding other media to an animation. **3.4b: How can I create a magazine cover using desktop publisher?** • Recognise how text and images convey information. • Identify the advantages and disadvantages of using text and images. • Recognise that text and layout can be edited. • Change font style, size, and colours for a given purpose. • Choose appropriate page settings. • Define the term 'page orientation' • Recognise placeholders and say why they are important. • Create a template for a particular purpose. • Add content to a desktop publishing publication. • Choose the best locations for content. • Paste text and images to create a magazine cover. • Consider how different layouts can suit different purposes.

		• Create a program that uses count-controlled loops to produce a given outcome by: • Designing a program that includes count-controlled loops • Making use of my design to write a program • Developing my program by debugging it		• Consider the benefits of desktop publishing in the real world or compared to hand drawn work. **3.4c: How can I create 3D shapes on the computer?** • Discuss the similarities and differences between 2D and 3D shapes • Explain why we might represent 3D objects on a computer. • Select, move and delete a digital 3D shape. • Change the colour of a 3D object. • Copy and paste a 3D object. • Navigate around the workplane using the rotation tool, and zooming in and out. • Combine two or more 3D shapes together to make a model. • Develop and improve 3D models from feedback.
Year 4	**4.1: How is the World Wide Web created?** • Describe how networks physically connect to other networks. • Recognise how networked devices make up the internet. • Outline how websites can be shared via the World Wide Web. • Describe how content can be added and accessed on the World Wide Web. • Understand how to use a search engine to find specific information. • Recognise how the content of the WWW is created by people. • Evaluate the consequences of unreliable content	**4.2: How do I use repetition and loops to create games?** • Develop the use of count-controlled loops in a different programming environment. • Predict the outcome of a snippet of code and modify a snippet of code to create a given outcome. • Explain that in programming there are infinite loops (forever) and count controlled (repeat) loops • Choose when to use a count-controlled and an infinite loop • Recognise that some programming languages enable more than one process to be run at once • Develop a design which includes two or more loops which run at the same time • Modify an infinite loop in a given program by identifying which parts of a loop can be changed and explaining these.	**4.3: How can I use a computer to organise data?** • Compare paper and computer-based databases. • Explain what a 'field' and a 'record' is in a database. • Use filters in a database to find out specific information. • Use a form to record information. • Explain that tools can be used to select data to answer questions. • Understand that the questions you ask are important, when collecting data. • Know that there is a difference between data and information.	**4.4a: How can I create an excellent presentation?** • Collect, organise and present information effectively using a range of media. • Plan out digital content and present ideas by combining media independently (text and images). • Understand what makes digital content good or bad and edit it to improve it. • Apply edits to digital content (text and media) to achieve a particular effect. • Select and apply edit to multimedia show to enhance the audience's experience (animation and transition) • Understand that the digital content we make belongs to us and others need to ask permission to use it • Use a search engine safely to find appropriate information.

		• Design and create a project that includes repetition (independently) • Refine and debug the algorithm in my design as I build my program		• Understand not all sources on the internet are reliable and how we choose the most appropriate ones. • Evaluate existing and their own digital content, and edit it to improve it according to feedback. • Present multimedia show to an audience. **4.4b: How can I enhance digital art by using a range of tools?** • Collect, organise and present information effectively using a range of media. • Use a variety of software to combine media in order to present information. • Design and create digital content for a specific purpose. • Create a piece of art work using a computer program. • Take and edit photographs to create a piece of art work. • Use a range of tools to edit and enhance media for a particular effect. • Evaluate existing and their own digital content and edit their own content to improve it according to feedback. • Understand that people can give permission for others to use their pictures. **4.4c: What makes a great podcast?** • Identify that sound can be digitally recorded. • Identify digital devices that can record sound and play it back • Identify the inputs and outputs required to play audio or record sound. • Use a digital device to record sound. • Explain that a digital recording is stored as a file.

				• Plan and write the content for a podcast. • Save a digital recording as a file • Open a digital recording from a file. • Explain ways in which audio recordings can be altered. • Edit sections of an audio recording. • Understand that different types of audio can be combined and played together. • Use editing tools to arrange sections of audio. • Evaluate and improve editing choices made from feedback.
Year 5	**5.1: How do is information shared in the digital world?** • Explain that computers can be connected together to form systems • Recognise the role of computer systems in our lives • Recognise how information is transferred over the internet • Explain how sharing information online lets people in different places work together • Contribute to a shared project online • Evaluate different ways of working together online	**5.2a: How do I use selection with a physical component?** • Control, build and program a simple circuit to connect a microcontroller to a computer. • Write a program that includes count-controlled loops. • Connect more than one output device to a microcontroller. • Design sequences for given output devices • Explain that a loop can stop when a condition is met, e.g. number of times • Program a microcontroller to respond to an input. • Conclude that a loop can be used to repeatedly check whether a condition has been met. • Use selection (an if… then… statement) to direct the flow of a program. • Design a physical project which includes selection. • Create a controllable system which includes selection by: Writing an algorithm to control lights and a motor, using selection to produce an intended	**5.3: How can spreadsheets help us organise data?** Identify questions which can be answered using data Explain what an item of data is Apply an appropriate number format to a cell Build a data set in a spreadsheet application Explain that formula can be used to produce calculated data Construct a formula in a spreadsheet Apply formulas to data, including duplicating Create a spreadsheet to answer questions and explain why the data is organised that way Produce a graph to present data	**5.4a: How can we use a navigation path to enhance a user's experience?** • Collect, organise and present information effectively using a range of media. • Plan out digital content and present ideas by combining media independently (text and images). • Understand what makes digital content good or bad and edit it to improve it. • Apply edits to digital content to achieve a particular effect. • Create a navigation path using hyperlinks and explain why navigation paths are useful. • Create hyperlinks to other people's work and recognise the implication of this. • Use a search engine safely to find appropriate information including copyright-free images and explain why they should be used. • Demonstrate an understanding that not all sources on the internet are reliable and how we choose the most appropriate ones.

		outcome, testing and debugging my project **5.2b: How do I create a program that makes choices dependent on conditions?** • Explain how selection is used in computer programs. • Identify and modify a condition in a program. • Relate that a conditional statement connects a condition to an outcome. • Use selection in an infinite loop to check a condition. • Identify the condition and outcomes in and, if…then… else statement. • Explain how selection directs the flow of a program. • Design a program which uses selection and identify the outcome of user input in an algorithm. • Create a program which uses selection and test it out. • Share the program with others and gain feedback. • Evaluate the project by identifying ways that it could be improved and further extended.		• Evaluate existing and their own digital content, and edit it to improve it according to feedback. • Present multimedia show to an audience. **5.4b: How can I use Computer Aided Design (CAD) to create 3D models?** • Use a computer to create and manipulate three-dimensional (3D) digital objects. • Compare working digitally with 2D and 3D graphics. • Plan a 3D model and choose which 3D objects are needed. • Construct a digital 3D model of a physical object. • Resize a 3D object and rotate a 3D object. • Position 3D objects in relation to each other. • Create digital 3D objects of an appropriate size. • Select and duplicate multiple 3D objects. • Group a digital 3D shape and a placeholder to create a hole in an object. • Design a digital model by combining 3D objects. • Develop and improve a digital 3D model from feedback.
Year 6	**6.1: How is the internet used to communicate and share information?** • Identify how to use a search engine • Describe how search engines select results • Explain how search results are ranked • Recognise why the order of results is important, and to whom	**6.2a: How do I create variables in a game?** • Define a 'variable' as something that is changeable • Explain why a variable is used in a program • Identify a program variable as a placeholder in memory for a single value		**6.4a: How do I create a website?** • Review an existing website and consider its structure, understanding websites are written in HTML • Recognise the common features of a web page • Plan the features of a web page

	• Recognise how we communicate using technology • Evaluate different methods of online communication	• Explain that a variable has a name and a value • Recognise that the value of a variable can be changed • 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 identifying the role of a variable and testing the code I have written • Evaluate my project by identifying ways that my game could be improved and extended by using more variables. **6.2b: How do I program a Micro Bit to be a step counter?** • Create a program to run on a controllable device. • Apply my knowledge of programming to a new environment • Test my program on an emulator. • Transfer my program to a controllable device. • Explain that selection can control the flow of a program. • Update a variable with a user input • Use a condition to change a variable. • Experiment with different physical inputs. • Use an conditional statement to compare a variable to a value • Use an operand (e.g. <>=) in an if… then… statement. • Design an algorithm for a project that uses inputs and outputs on a controllable device, including variables. • Develop a program to use inputs and outputs on a controllable device. • Test my program against my design and use a range of approaches to find and fix bugs.		• Draw a web page layout that suits a purpose • Consider the ownership and use of images (copyright) • Find copyright-free images and explain why they should be used • Add content to a web page • Preview what a web page looks like before publishing • Evaluate what my web page looks like on different devices and suggest/make edits to improve. • Explain what a navigation path is describing why navigation paths are useful • Make multiple web pages and link them using hyperlinks • Recognise the implications of linking to content owned by other people • Create hyperlinks to link to other people's work **6.4b: How can I recreate the work of a famous artist using digital technology?** • Explore the artist David Hockney and his iPad art. • Select and use software on a tablet to design and create artistic content. • Explore a range of art apps identifying positives and negative of the apps. • Experiment with tools and brushes available. • Create a piece of iPad art in the style of David Hockney. • Evaluate and improve art work from feedback. • Publish art work on an internet forum showing an understanding of staying safe online. **6.4c: What makes a brilliant film?**

				• Recognise video as moving pictures, which can include audio • Plan a video project using a storyboard • Identify digital devices that can record video • Locate and identify the working features of a digital device that can record video • Capture video using a digital device • Demonstrate the safe use and handling of devices • Recognise the features of an effective video • Explain why lighting and angle are important in creating an effective video • Identify that video can be improved through reshooting and editing • Store, retrieve, and export my recording to a computer • Select the correct tools to make edits to my video • Make edits to the video and improve the final outcome • Evaluate the video and share opinions