Vine Tree Primary School Progression Document 

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| Progression in Computing | | | | | | | |
|  | **Reception – ELG, Expressive Arts and Design / Physical Development** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Computer Systems and Networks** | Following activities based on Computational thinking.  Children will have a variety of problem solving activities throughout the year based on:  Creating pattern  Algorithms  Collaborating  Abstraction  Tinkering | **Safety & Technology Around Us**  Recognising technology in school and using it responsibly.  As this is a Year 1 unit, no prior knowledge is assumed. This unit progresses students’ knowledge and understanding of technology and how they interact with it in school. Learners will build their knowledge of parts of a computer and develop the basic skills needed to effectively use a computer keyboard and mouse. This unit directly precedes the Y2 Computer systems and networks unit, IT around us | **Information Technology Around Us**  Identifying IT and how its responsible use improves our world in school and beyond.  This unit progresses learners' understanding of technology and how they interact with it. They will develop this understanding to become familiar with the term information technology and will be able to identify common features of IT. This unit also builds on the learners’ understanding of using technology safely and responsibly. | **Connecting computers**  Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks  This unit progresses learners’ knowledge and understanding of technology by focusing on digital and non-digital devices, and introducing the concept of computers connected together as a network. Following this unit, learners will explore the internet as a network of networks. | **The internet**  Recognising the internet as a network of networks including the WWW, and why we should evaluate online content.  This unit progresses students’ knowledge and understanding of networks in Year 3. In Year 5, they will continue to develop their knowledge and understanding of computing systems and online collaborative working. | **Systems and searching**  Recognising IT systems around us and how they allow us to search the internet.  This unit progresses learners’ knowledge and understanding of computing systems. | **Communication and collaboration**  Identifying and exploring how data is transferred and information is shared online.  This unit progresses learners’ knowledge and understanding of computing systems and online collaborative working. |
| **Creating Media** | **Digital Painting**  Choosing appropriate tools in a program to create art, and making comparisons with working non-digitally.  Learners should be familiar with:   * How to switch their device on * Usernames * Passwords   For an introduction to keyboard and mouse skills, learners may benefit from completing the Year 1 Computing Systems & Networks unit prior to this unit. | **Digital Photography**  Capturing and changing digital photographs for different purposes.  This unit begins the learners’ understanding of how photos are captured and can be manipulated for different purposes. Following this unit, learners will develop their photo editing skills in Year 4. | **Stop-frame animation**  Capturing and editing digital still images to produce a stop-frame animation that tells a story. This unit progresses students’ knowledge and understanding of using digital devices to create media, exploring how they can create stop-frame animations. Following this unit, learners will further develop their video editing skills in Year 5. | **Audio production**  Capturing and editing audio to produce a podcast, ensuring that copyright is considered.  This unit progresses students’ knowledge and understanding of creating media, by focusing on the recording and editing of sound to produce a podcast. Following this unit, learners will explore combining audio with video in the ‘Video editing’ unit in Year 5. | **Video production**  Planning, capturing, and editing video to produce a short film.  This unit progresses learners’ knowledge and understanding of creating media by guiding them systematically through the process involved in creating a video. The unit builds on the Year 4 unit ‘Photo editing’ where composition is introduced and the Year 3 unit ‘Stop-frame animation’ where learners explored some of the features of video production. By the end of this unit, learners will have developed the skills required to plan, record, edit, and share a video. | **Webpage creation**  Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation  This unit progresses students’ knowledge and understanding of the following: digital writing, digital painting, desktop publishing, digital photography, photo editing, and vector drawing. |
| **Programming A** |  | **Moving Robot**  Writing short algorithms and programs for floor robots, and predicting program outcomes.  As this is a Year 1 unit, no prior knowledge is assumed.  This unit progresses learners’ knowledge and understanding of giving and following instructions. It moves from giving instructions to each other to giving instructions to a robot by programming it. | **Robot Algorithms**  Creating and debugging programs, and using logical reasoning to make predictions.  In advance of the lessons in this Year 2 unit, learners should have had some experience of creating short programs using floor robots and predicting the outcome of a simple program. This unit progresses learners’ knowledge and understanding of algorithms and how they are implemented as programs on digital devices. Learners will spend time looking at how the order of commands affects outcomes. Learners will use this knowledge and logical reasoning to trace programs and predict outcomes. | **Sequencing sounds**  Creating sequences in a block-based programming language to make music  This unit assumes that learners will have some prior experience of programming; the KS1 NCCE units cover floor robots and ScratchJr. However, experience of other languages or environments may also be useful. | **Repetition in shapes**  Using a text-based programming language to explore count-controlled loops when drawing shapes.  This unit progresses students’ knowledge and understanding of programming. It progresses from the sequence of commands in a program to using count-controlled loops. Pupils will create algorithms and then implement those algorithms as code. | **Selection in physical computing**  Exploring conditions and selection using a programmable microcontroller  This unit assumes that learners will have prior experience of programming using a block-based language (eg Scratch) and understand the concepts of sequence and repetition. The National Centre for Computing Education key stage 1 units focus on floor robots and ScratchJr, however, experience of other languages or environments may also be useful. | **Variables in games**  Exploring variables when designing and coding a game.  This unit assumes that learners have some prior experience of programming in Scratch. Specifically, they should be familiar with the programming constructs of sequence, repetition, and selection. These constructs are covered in the Year 3, 4, and 5 National Centre for Computing Education programming units respectively. Each year group includes at least one unit that focuses on Scratch. |
| **Data and Information** |  | **Grouping Ideas**  Exploring object labels, then using them to sort and group objects by properties.  This unit will introduce learners to data and information. It will introduce learners to the concept of labelling and grouping objects based on their properties. Learners will develop their understanding that objects can be given labels, which is fundamental to their future learning concerning databases and spreadsheets. In addition, learners will begin to improve their ability to use dragging and dropping skills on a device. Following this unit, in year 2, learners will present data graphically in pictograms. | **Pictograms**  Collecting data in tally charts and using attributes to organise and present data on a computer.  This unit progresses students’ knowledge and understanding of grouping data. It builds on the Year 1 Data and Information unit where learners labelled objects and grouped them based on different properties. In Year 3 learners develop their understanding of attributes (properties) using branching databases to structure data according to different object attributes. | **Branching databases**  Building and using branching databases to group objects using yes/no questions.  This unit progresses learners’ knowledge and understanding of the categories of data handling, with a particular focus on implementation. It builds on their knowledge of data and information from key stage 1. They will continue to develop their understanding of attributes and begin to construct and interrogate branching databases as a means of displaying and retrieving information. | **Data logging**  Recognising how and why data is collected over time, before using data loggers to carry out an investigation.  This unit progresses learners’ knowledge and understanding of data and how it can be collected over time to answer questions. Specifically, it builds on the concept of answering questions with data which is first introduced in the KS1 data and information units. The unit also introduces the idea of automatic data collection. Learners are also introduced to data in tables and graphs, knowledge they will build on in the Year 5 unit (flat file databases) and the Year 6 unit (spreadsheets). | **Flat-file databases**  Using a database to order data and create charts to answer questions  This unit progresses learners’ knowledge and understanding of why and how information might be stored in a database, and looks at how tools within a database can help us to answer questions about our data. It moves on to demonstrate how a database can help us display data visually, and how real-life databases can be used to help us solve problems. Finally, the learners create a presentation showing understanding and application of all the tools used within the unit. | **Introduction to spreadsheets**  Answering questions by using spreadsheets to organise and calculate data.  This unit progresses students’ knowledge and understanding of data, and teaches them how to organise and modify data within spreadsheets. Specifically, learners will have experienced data in tables and charts in the Y4 data logging and Y5 branching database units. |
| **Creating Media** |  | **Digital Writing**  Using a computer to create and format text, before comparing to writing non-digitally  This unit progresses the learners’ knowledge and understanding of using computers to create and manipulate digital content, focusing on using a word processor. The learners will develop their ability to find and use the keys on a keyboard in order to create digital content. The learners are then introduced to manipulating the resulting text, making cosmetic changes, and justifying their reason for making these changes. Following this unit, learners will further develop their digital writing skills in the Year 3 – ‘Desktop publishing’ unit and the Year 6 – ‘Web page development’ unit. | **Making Music**  Using a computer as a tool to explore rhythms and melodies, before creating a musical composition.  Learners should have experience of making choices on a tablet/computer, and they should be able to navigate within an application. Learners should also have some experience of patterns.  This unit progresses students’ knowledge through listening to music and considering how music can affect how we think and feel. Learners will then purposefully create rhythm patterns and music. | **Desktop publishing**  Creating documents by modifying text, images, and page layouts for a specified purpose  This unit progresses learners’ knowledge and understanding of using digital devices to combine text and images building on work from the following units; Digital Writing Year 1, Digital painting Year 1, and Digital Photography Year 2. | **Photo editing**  Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled.  This unit progresses students’ knowledge and understanding of digital photography and using digital devices to create media. Following this unit, learners will further develop their image editing skills in Year 5 – Vector drawing. | **Vector drawing**  Creating images in a drawing program by using layers and groups of objects.  This unit progresses learners’ knowledge and understanding of digital painting and has some links to the Year 3 ‘Creating media – Desktop publishing’ unit, in which learners used digital images. In this Year 5 unit, learners create images that could be used in desktop publishing documents. | **3D modelling**  Planning, developing, and evaluating 3D computer models of physical objects.  This unit progresses students’ knowledge and understanding of creating 3D graphics using a computer. Prior to undertaking this unit, learners should have worked with 2D graphics applications. |
| **Programming B** |  | **Programming Animations**  Designing and programming the movement of a character on screen to tell stories.  This unit progresses learners’ knowledge and understanding of programming and follows on from ‘Programming A – Moving a robot’, where children will have learned to program a floor robot using instructions. | **Programming Quizzes**  Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz.  This unit progresses learners’ knowledge and understanding of instructions in sequences and the use of logical reasoning to predict outcomes. | **Events and actions in programs**  Writing algorithms and programs that use a range of events to trigger sequences of actions.  This unit assumes that learners will have some prior experience of programming. The key stage 1 National Centre for Computing Education units focus on floor robots and ScratchJr, however experience of other languages or environments may also be useful. The Year 3 — Programming A unit introduces the Scratch programming environment and the concept of sequences. | **Repetition in games**  Using a block-based programming language to explore count-controlled and infinite loops when creating a game.  This unit assumes that learners will have some prior experience of programming. The KS1 NCCE units cover floor robots and ScratchJr, and Scratch is introduced in the Year 3 programming units. However, experience of other languages or environments may also be useful. | **Selection in quizzes**  Exploring selection in programming to design and code an interactive quiz.  This unit assumes that learners will have prior experience of programming using block-based construction (e.g. Scratch), understand the concepts of ‘sequence’ and ‘repetition’, and have some experience of using ‘selection’. Ideally, learners will have completed ‘Programming A – Selection in physical computing’ before undertaking this unit, as this will provide them with the required knowledge of ‘selection’. | **Sensing**  Designing and coding a project that captures inputs from a physical device.  This unit presumes that pupils are already confident in their understanding of sequence, repetition and selection independently within programming. If pupils are not yet ready for this, you may wish to revisit earlier programming units where these constructs are introduced. |