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| Computing |
| Scratch Has a Marketing Problem | Convert real time data into information instantly | by Eranga Liyanage |  Medium | IT Network Solutions in Vancouver | Supergeek | Media content creation stock vector. Illustration of background - 98983755 |  |
| Programming | Data and Information | Computer Systems & Networks | Creating Media | Operating devices / Searching and selecting information / Using devices safely and responsibly |
| Computer Science | Information Technology | Digital Literacy |

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| Key concepts (Big Ideas) in **COMPUTING** |
| *Pupils will develop their knowledge of computing through the three strands of* ***computer science****,* ***information technology*** *and* ***digital literacy****. The computing curriculum will equip pupils with the knowledge to become creators of digital technologies and digital artefacts.* **COMPUTER SCIENCE:**  This focuses on programming & algorithms and data & information. This will provide pupils with the foundational knowledge needed to understand the rest of the curriculum. Scratch Has a Marketing Problem**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. Pupils will implement algorithms as programs on digital devices, working with various forms of input and output. They will use sequence, selection and repetition in programs.Convert real time data into information instantly | by Eranga Liyanage |  Medium**Data and information**Pupils will learn how to collect, analyse, evaluate and present data and information**INFORMATION TECHNOLOGY:**  Studying this aspect will give children the knowledge of how computers are used in society. They will also explore how computers are used to create digital artefacts such as videos, animations or 3D models.IT Network Solutions in Vancouver | Supergeek**Computer systems and networks**Pupils will learn about computer systems, networks and how they are used. They will learn about the opportunities for communication and collaboration offered by networks and how to use these services safely and respectfully. They will also learn about the internet and different types of hardware and software.Media content creation stock vector. Illustration of background - 98983755**Creating 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.**DIGITAL LITERACY**: This is woven through the key concepts above. Pupils will learn how to…* **operate devices**
* **search and select information**
* **use digital devices** **safely and responsibly**
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| Knowledge and skills sequencing | **COMPUTING** |  |  |
|  | EYFS | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 |
| COMPUTER SCIENCE | **Programming**Scratch Has a Marketing ProblemRelated digital media content:Operating devices | Program a floor robot to follow a simple set of instructions. (N)Completes a simple program on an electronic device to achieve a goal (beebots). (R) | Understand what commands areUse commands to control a deviceChoose commands to achieve a gaolUnderstand that a program is a set of commandsDebug and improve programsKnow that an algorithm is a set of instructions**Suggested TC unit – Moving a robot** | Understand that an algorithm is a set of instructions.Understand that computers read and follow algorithms without thought.Make predictions about programs.Write a program to achieve an aim.Debug and improve programs**Suggested TC unit – Robot Algorithms** | Understand that commands have outcomes.Write a program from a task description.Develop, adapt and refine a program Develop a process for debugging.**Suggested TC unit – Sequencing sounds** | Develop understanding in a **different environment.**Use loops in programs.Compare infinite loops and count- controlled loops.Debug and improve programs**Suggested TC unit – Repetition in shapes** | Control a simple circuit connected to a computer.Design write and create a program that uses selection.Write programs including controlled loops.**Suggested TC unit – Selection in physical computing** | Understand what variables are.Know how to use variables in programs.Write a purposeful program using variablesDebug, improve and evaluate projectsWrite code to control a device for a purposeInstall software onto hardware**Suggested TC unit – Variables in games****Sensing movement** |
| COMPUTER SCIENCE | **Data and information**Convert real time data into information instantly | by Eranga Liyanage |  MediumRelated digital media content:Operating devicesSearching and selecting information | Group objects by type. (N)Discuss data and information and understand that things can be categorised using labels. (R)Create tally charts. (R) | Understand that objects can be labelled and grouped.Be able to label and group objects based on properties.Choose searches and compare groups.Debug and improve.**Suggested TC unit – Grouping data** | Understand that data can be represented in pictograms and tally charts.Be able to present and discuss data.Draw conclusions from represented data.**Suggested TC unit - Pictograms** | Understand that attributes can be used to refine data.Select appropriate attributes required to find desired data.Understand what a branching database is.Use a branching database to sort information.Compare branching databases/pictograms.**Suggested TC unit – Branching databases** | Understand that data can be collected over time.Be able to use a datalogger.Select what data need to be collected.Answer questions using data.**Suggested TC unit – Data logging** | Compare paper and computer-based databasesExplain that tools can be used to select specific dataApply knowledge of a database to ask and answer real-world questions**Suggested TC unit – Flat-file databases** | Understand how spreadsheets organise data.Manipulate data sets using spread- sheets.Write and use formulas.Calculate using spreadsheets.**Suggested TC unit – An introduction to spreadsheets** |

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|  |  | EYFS | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 |
| INFORMATION TECHNOLOGY | **Computer systems and networks**IT Network Solutions in Vancouver | SupergeekRelated digital media content:Operating devicesSearching and selecting informationUsing devices safely and responsibly | To know that a computer has a mouse and a key- board 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) | Understand what technology is.Know what technology theyhave in their lives.Be able to use a mouse and a keyboard.Be able to open a file.Be able to create a typed document and save it.**Suggested TC unit – Technology around us** | Develop the understanding of where technology can be found in the world.Be able to name the types of technology found in shops, schools and at home.Understand why we use IT.Understand how to use IT safely.**Suggested TC unit – Information technology around us** | Understand how inputs and outputs work in digital technology and use this to achieve an aim.Understand why we choose to use technology.Understand the difference between digital and analogue outcomes.Begin to understand how networks connect people and how they work.**Suggested TC unit – Connecting Computers** | Understand how computers are physically connected in networks.Start to understand the role of some of the devices in a network.Know what the internet and WWW are and that they are differentUnderstand that people create webpage.Understand that not all information onthe WWW is accurate.**Suggested TC unit – The internet** | Understand what a digital system is.Recognise the role of computer systems in our livesUnderstand that the internet forms part ofsome systems.Develop from the understanding of the internet to understand what the WWW is.Be able to carry out specific searches on the WWW.Understand how search engines work.**Suggested TC unit – Systems and Searching** | Know what an IP address is.Know that the internet can be used tocommunicate.Understand how systems and networksenable collaborative working.Be able to work collaboratively online.Evaluate methods of online communicationUnderstand how to stay safe whencommunicating online.**Suggested TC unit – Communication and Collaboration** |
| INFORMATION TECHNOLOGY | **Creating media**Media content creation stock vector. Illustration of background - 98983755Related digital media content:Operating devices | To independently listen to digital audio. (N)Take photographs using a digital device. (N/R)To record video using a digital device. (R)To record audio. (R) | Use technology purposefully to create digital contentSelect and use a range of toolsCompare digital and paper-based content**Suggested TC unit – Digital writing** | Use technology purposefully to create digital contentProduce digital content to meet a briefEdit and improve own pieces**Suggested TC unit – Making music** | Select, use and combine a variety of software on a range of devicesUnderstand how to create and edit content using ITUse editing tools such as copy and paste to create content.**Suggested TC unit – Stop Frame Animation** | Select, use & combine a variety of software on a range of devicesUnderstand how to create and edit content using ITUse editing tools such to create content.Understand what input & output devices are.**Suggested TC unit – Audio production** | Understand what makes digital content effective.Create digital content for a specific purposeImprove and edit work produced**Suggested TC unit – Introduction to vector graphics** | Understand that web pages are written in HTML.Plan a web page design.Create a web page using software.Use navigation paths and considereffective links.**Suggested TC unit – Web page creation** |

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|  |  | EYFS | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 |
| DIGITAL LITERACY | Operating devicesSearching and selecting informationUsing devices safely and responsibly | Knows how to access information on a device eg: open an app, open a link, use a QR codeKnows to ask an adult if they want to go online | Uses digital technology to find informationKnows not to share personal information online | Navigates the web to complete simple searchesKnows what personal information is and why to keep it privateCan say who they would go to for help if they were worried by something they saw onlineCan choose appropriate websites and avoid sites/pop ups that are not appropriate or accurate | Searches for information on the web in different waysKnow how to access help if they are concerned about anything on social media or the internet Knows how to use technology safely, respectfully and responsiblyUnderstands why passwords are used online and how to use them responsibly | Understands that not all information on the WWW is accurate.Understand how to protect their identity online and how to report any concernsKnows what to do if they see inappropriate content or they are contacted by someone they do not know onlineUnderstands what cyberbullying is and know how to be a member of a respectful and positive online community | Understands how search results are selected and rankedKnow that there are rights and responsibilities in an online community or social network Know that there are rights and responsibilities when playing a game online Know that too much screen time isn’t healthy Know how to stay safe when using technology to communicate with friends Knows what to do if they see inappropriate content (including pop ups) or am contacted by someone I do not know onlineUnderstands the importance of online security and how to create a secure password | Be able to carry out specific searches on the WWW.Understand how search engines work.Know some of the dangers of being ‘online’ Know how to use technology safely and positively to communicate with their friends and family Knows how to protect private information onlineUnderstands how to be respectful and responsible online as well as offline |

