Springdale First School

Computing concepts and component map

Imagine, Believe, Achieve

Concepts and components	Year 1	Year 2	Year 3	Year 4
Concept - Computer Science	**Computational Thinking** Begin to understand that algorithms are a set of instructions to achieve a given objective. Begin to use logical reasoning to predict the behaviour of simple programs.	**Computational Thinking** I can explain that an algorithm is a set of instructions to complete a given task. I understand that computers need precise instructions.	**Computational Thinking** I can use logical reasoning to explain what will happen next. I can solve problems by decomposing them into smaller parts. I can predict how a change in a sequence may impact on the outcome of the instructions.	**Computational Thinking** I can design, write and debug more complex algorithms. I can use an increasing number of variables.
Components – Computational Thinking Coding and Programming Computer networks	**Coding and programming** I can give and follow simple instructions. I can plan and create a simple algorithm.	**Coding and Programming** I can create a simple program that achieves a specific purpose. I can identify and correct some errors.	**Coding and Programming** I can create, edit and debug a program to achieve a specific purpose. I can create, edit and debug a program that uses variables. I know what a flowchart is.	**Coding and Programming** Begin to understand selection and use this in my programs. I can create, edit and debug programs that use an increasing number of variables. I understand inputs and outputs and can design, write and debug programs using these.
	Computer networks I know that technology is used in school and outside of school. I know where examples of technology can be found in school.	**Computer networks** I can identify the IT equipment used within the school and at home and discuss its use. I can explain how technology benefits us.	**Computer networks** I understand that computers are connected to the internet. I know that computers can be connected to share information. I can identify input and output devices.	**Computer networks** I understand how networked devices make up the Internet. I understand the difference between the Internet and the World Wide Web. I know that there are key parts that make up a computer, what they are called and their function.

Concepts and components	Year 1	Year 2	Year 3	Year 4
Concept - Information Technology **Components –** Word Processing /Typing Data Handling Presentations Digital Media Augmented Reality and Virtual Reality	**Word Processing /Typing** I can use a keyboard to enter information. I can use the space key, shift key and delete key. **Data Handling** I know how to sort items using a range of criteria. I can use a software package for grouping items. I know that data can be represented in a picture format and can use a software package to record results in a pictogram format. **Presentations** I know how to create a picture that I can then animate using a software package. **Digital Media** I know what e-books are and can discuss the difference between e-books and conventional books. I can use a software package that allows me to create an e-book. I know how to create a sound recording using a software package and how to add this to an e-book.	**Word Processing /Typing** I am beginning to use two hands to enter text. I can enter and amend text with increasing fluency. **Data Handling** I know how to construct a binary tree to identify items. I know what a spreadsheet program can do and can enter data into spreadsheet cells. I know how to use some of the tools of the spreadsheet software to perform operations on the data. I know how to create a block graph from the data within the spreadsheet. **Presentations** I know that digital content can be presented in many different forms and I can collect, organise and present data in a digital format. I know how to use presentational software such as a quiz and can make improvements to it depending upon feedback. **Digital Media** I know how to make forms of digital music using a software package. I can compose, edit and refine my music. I know how to create /upload and import sounds from beyond the software environment. I know how to use the tools within a software package to create more meaningful illustrations for my e-book.	**Word Processing /Typing** I know typing terminology and know the correct position of my hands on the keyboard. I can talk about the top, middle and lower row section of the keyboard and know which keys are typed by the left and right hand. **Data Handling** I know how to create tables of data within a spreadsheet. I know how to describe a cell within a spreadsheet and can use various features to support calculation. I know how to sort data in a graphing package to make analysis easier. **Presentations** I know what a presentation is and how it can be used. I know how to add pages and media. I know how to use animations and slide transitions. I know how to effectively present to an audience using presentation software. **Digital Media** I know how to use digital communication and know the strengths and weaknesses of this. I know how to compose, open and reply to emails. I can add attachments to emails. **Augmented Reality and Virtual Reality** I know what a computer simulation is and how it can represent real and imaginary situations. I know the advantages and problems of using simulations.	**Word Processing /Typing** I Know how font size and style can affect the impact of a text. I can use a word processing package to enter text that is suitable for the intended audience. **Data Handling** I know what cell formatting is. I know how to format cells as currency, percentage, decimal or fraction. I know how to use formula wizard tools and how to add a formula to a cell in in order to speed up calculations when data is altered. I know how to combine spreadsheet tools to create a purposeful spreadsheet e.g. a timed times table test and I know how to use a spreadsheet to model a real-life situation . **Presentations** I know how to use a simulated scenario to produce a news report and campaign using digital technology. **Digital Media** I know what 'stop motion' animation is and that animations can be created by hand and created using computers. I know what onion skinning is when referring to animation and I know that animations can be enhanced using features in software such as background and sounds. **Augmented Reality and Virtual Reality** I know the basic concept of what artificial intelligence is. I know the key impact of artificial intelligence on daily life and can give some real-life examples of the current use of artificial intelligence. I know how to think critically about artificial intelligence including its use in the future. I know how to utilise artificial intelligence to create media such as images and music.

Concepts and components	Year 1	Year 2	Year 3	Year 4
Concept - Digital Literacy **Components –** Self-Image and Identity Online Relationships Online Reputation Online Bullying Managing Online Information Health, Well-being and Lifestyle Privacy and Security Copyright and Ownership	**Self-Image and Identity** If something happens online that makes me feel sad, worried, uncomfortable or frightened I can give examples of when and how to speak to an adult I can trust and how they can help. **Online Relationships** I can give examples of why I should ask permission to do something online and explain why this is important. I can explain why it is important to be considerate and kind to people online and to respect their choices.	**Self-Image and Identity** I can explain how other people may look and act differently online and offline. I can give examples of issues online that might make someone feel sad, worried, uncomfortable or frightened; I can give examples of how they might get help. **Online Relationships** I can give examples of how someone might use technology to communicate with others they don't also know offline and explain why this might be risky. I can explain who I should ask before sharing things about myself or others online. I can describe different ways to ask for, give, or deny my permission online and can identify who can help me if I am not sure. I can explain why I have a right to say 'no' or 'I will have to ask someone'. I can explain why I should always ask a trusted adult before clicking 'yes', 'agree' or 'accept' online.	**Self-Image and Identity** I can explain what is meant by the term 'identity'. 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. **Online Relationships** 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 the importance of giving and gaining permission before sharing things online.	**Self-Image and Identity** I can explain how my online identity can be different to my offline the identity. I can explain that others online can pretend to be someone else, including my friends. **Online Relationships** I can give examples of how to be respectful to others online. I can give examples of how to recognise healthy and unhealthy online behaviours.
	Online reputation I know that I should not share my personal information online.	**Online reputation** I can explain how information put online about me can last for a long time. I can describe how anyone's online information could be seen by others.	**Online reputation** I can explain the need to be careful before sharing anything personal online.	**Online reputation** I can explain ways that some of the information about anyone online could have been created, copied, or shared by others.
	Online bullying I can describe how to behave online in ways that do not	**Online bullying** I can explain what bullying is. I can talk about how anyone experiencing bullying can get help.	**Online bullying** I can describe appropriate ways to behave towards other people online and why this is important. I can give	**Online bullying** I can describe ways people can be bullied through a range of media (e.g. image, video, text, chat). I can explain

upset others and can give examples.		examples of how bullying behaviour could appear online and how someone can get support.	why I need to think carefully about how content I post might affect others, their feelings and how it may affect how others feel about them (their reputation).
Managing online information I know and understand that we can encounter a range of things online including things we like and don't like as well as things which are real or make believe / a joke.	**Managing online information** I can use simple keywords in search engines. I can demonstrate how to navigate a simple webpage to get to information I need. I can explain what voice activated searching is and how it might be used (e.g. Alexa)	**Managing online information** I can demonstrate how to use key phrases in search engines to gather accurate information online. I can explain the difference between a 'belief', an 'opinion' and a 'fact.	**Managing online information** I can analyse information to make a judgement about probable accuracy. I can describe some of the methods used to encourage people to buy things and can recognise some of these when they appear online. 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.
Health, wellbeing and lifestyle I can explain rules that help keep us safe and healthy in and beyond the home when using technology.	**Health, wellbeing and lifestyle** I can explain why it is important to follow rules when using technology both in and beyond the home.	**Health, wellbeing and lifestyle** I can explain why some online activities have age restrictions and why it is important to follow those guidelines.	**Health, wellbeing and lifestyle** I can explain why using technology can sometimes have a negative impact. I can explain both positive and negative impacts of using technology.
Privacy and security I can recognise more detailed examples of information that is personal to someone (e.g. where someone lives and goes to school, family names). I can explain that passwords are used to protect accounts and information.	**Privacy and security** I can explain and give examples of what is meant by 'private' and 'keeping things private'. I can describe and explain some rules for keeping personal information private (e.g. passwords). I can explain how passwords can be used to protect information, accounts and devices.	**Privacy and security** 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.	**Privacy and security** I can explain that internet use is never fully private and is monitored, e.g. adult supervision. I know what the digital age of consent is and the impact this has on online services asking for consent. I can explain that some online services may seek consent to store information about me and know how to respond appropriately and who I can ask if I am not sure.
Copyright and ownership I know that the work I create using technology belongs to me.	**Copyright and ownership** I can describe why other people's work belongs to them.	**Copyright and ownership** 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.	**Copyright and ownership** 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.