Cambridgeshire Progression in Computing Capability

These progression statements are designed to complement the National Curriculum for Computing in England. More detailed guidance for both **subject leaders** and **class teachers** can be found at www.theictservice.org.uk/primary-computing

	Understanding Technology	Programming	Digital Literacy	Online Safety
Year 1	Pupils recognise and can give examples of common uses of **information technology** they encounter in their daily routine.	Pupils create, **debug** and implement instructions (simple **algorithms**) as **programs** on a range of digital devices. Pupils understand that **digital devices** follow precise and unambiguous instructions. They understand that digital devices can **simulate** real situations.	With adult guidance, pupils use a range of technology to enhance and present their learning. Within both specific computing lessons and cross curricular contexts, pupils are able to: • enquire with purpose, accessing **digital content** such as text, still and moving images, video and audio • collect **data** (e.g. numerical, research facts etc.) which they are able to retrieve, store and present as graphs, tables and charts • present and communicate their learning to others in a variety of ways using text, still images, video and audio, including combining 2 or more of these mediums	Pupils are becoming increasingly aware of **content**, **contact** and **conduct** benefits and risks, how to manage them safely and where to go for help and support when they have concerns or feel unsafe, worried or upset. They are beginning to develop a better understanding of their own and others' **'identity'** (including online), the importance of keeping personal information private and of seeking permission before sharing. They check with an adult before clicking on **pop ups**, **notifications** or **dialogue boxes**. They increasingly use a range of **digital devices** to communicate safely and respectfully online, making links to positive behaviour in the physical world. *More specific guidance for Year 1 and Year 2 teachers can be found at www.theictservice.org.uk/primary-computing*
Year 2	Pupils recognise common uses of **information technology** beyond school, including those which they don't frequently encounter in their daily routine. Pupils understand that computers are not intelligent but can appear to be when following **algorithms**. They can share examples of this.	Pupils understand that **algorithms** are implemented as **programs** on **digital devices.** Pupils create and **debug programs** to achieve specific goals and understand the importance of **sequence**. Pupils use the **principles of logical reasoning** to plan and predict the behaviour of simple **programs**. They solve problems on and off screen		
Year 3	Pupils understand that **computers** (in various forms) generally accept **inputs** and produce **outputs** and can give examples of this. Pupils recognise - and can describe - some of the services offered by the **Internet**, especially those used for communication and collaboration.	Pupils create **programs** to accomplish specific goals using an increasing range of **digital devices** and **applications**. They can **decompose** programs to test them and understand how making even small changes to an **algorithm** can have a significant impact on the outcome. They begin using **simple repetition** (e.g. *'repeat x times'* and *'repeat forever'*) and understand how this can be used to improve **efficiency** in their programs.	With increasing levels of autonomy, pupils are becoming confident and creative users of technology. Within both specific computing lessons and cross curricular contexts, pupils are able to: • follow and expand on agreed lines of enquiry, using key words and phrases to effectively access **digital content** such as text, still images, video and audio • identify, collect and manipulate different types of **data** (e.g. numerical, research facts etc.) which they present as **information**, showing a greater awareness of purpose and audience • present and communicate their learning to others in a variety of ways using text, still images, video and audio • They combine **digital tools** to achieve **specific goals** and think carefully about the **impact on their audience**	Pupils are able to identify a range of **content**, **contact** and **conduct** benefits and risks, describe how to manage them safely and respectfully and know where to go for help and support when they have concerns. They can explain what is meant by '**identity**', how this might be represented differently in different situations and why others might mis-represent their identity. They develop their understanding of **'trust'** and the importance of being careful about what is shared online and of giving and gaining **consent**. Pupils can describe **positive and negative effects of online activity / behaviours** and begin to understand how to make safer and healthier decisions, including considering the appropriateness of games and online content for different ages. Pupils can describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them. *More specific guidance for Year 3 and Year 4 teachers can be found at www.theictservice.org.uk/primary-computing*
Year 4	Pupils develop a basic understanding of how computers can be linked to form a **local network** such as those found in schools. Pupils recognise that there is a difference between the **Internet** and the **World Wide Web.** They can recognise and describe some of the services offered by the **Internet**, especially those used for communication and collaboration.	Pupils create and debug **programs** containing **simple repetition** (e.g. *'repeat x times'* and *'repeat forever'*) as well as more **complex repetition** (e.g. *'nested loops'*) Pupils increasingly use their programming capability to control or simulate a range of different **outputs** in **physical systems.** Pupils begin to explore and notice the similarities and differences between **programming languages** and use this knowledge to help them create and **debug programs** efficiently.		
Year 5	Pupils know that there is a difference between the **Internet** and the **World Wide Web** and understand that the web is just one of the services offered by the Internet (as well as, e.g. **email** and **VoIP services** such as Skype). They appreciate how **search results** are ranked, including an understanding of the use of different **algorithms** to prioritise results. Pupils understand that the highest-ranking search results may not always be the most relevant. They appraise search results based on their **relevance** and **trustworthiness**, and can explain what is meant by '**fake news**'	Pupils create, **deconstruct** and refine **programs** to accomplish specific goals. They create programs with **loops** which terminate when **conditions** are met or continue whilst **conditions** are present (e.g. *'repeat until' and 'repeat whist'*). Pupils understand and use simple **selection** (e.g. *if/then* and *if/then/else*) to create **interactive programs** based on **conditions** being met / not met. They begin to use simple **operators** within their programs.	Pupils are confident, capable and creative users of technology. Within both specific computing lessons and cross curricular contexts, pupils are able to: • create and effectively follow lines of enquiry to support their learning, and are discerning in **evaluating digital content** they encounter • identify, collect and analyse different types of **data** (e.g. numerical, words, images, video etc.) which they manipulate and re-present as **information** for a variety of audiences and purposes • select and make effective use of **digital tools** to create **digital artefacts** both under instruction and of their own choosing • decide on the most appropriate way to present their learning - thinking about **aesthetics**, **functionality** and **impact** on the user, and responding appropriately.	Pupils identify and manage the benefits and risks of a range of online activities in terms of **content**, **contact** and **conduct** to ensure they are **safe**, **respectful** and **responsible** online. They know how to report concerns, seek support for themselves and others and persist until they get the help they need. Pupils make responsible choices about their own online **identity** and consider the potential impact of this on their **digital footprint.** They understand that online **identities** can be **copied** or **modified** and some of the possible implications of this. They can describe times when they might responsibly share **personal information** (including payment details), the importance of seeking permission and the need for **strong passwords**. They can describe ways technology may impact their own and others' **physical and mental wellbeing** (positively and negatively), understand their responsibilities in regard to this and can suggest a range of positive strategies to limit the negative impact of technology and online behaviours. *More specific guidance for Year 5 and Year 6 teachers can be found at www.theictservice.org.uk/primary-computing*
Year 6	Pupils understand and can explain how **computer networks** work, including the **Internet.** They begin to understand how **data** travels across **networks** in **packets** and how these can be broken up and reconstructed. When accessing information online, pupils recognise that **opinions** may be presented as **facts.** They can describe why an opinion may easily become popular online but they understand that this doesn't necessarily make it true. They understand that some online content may be commercially sponsored such as **adverts in search results** or content presented by **social media influencers**.	Pupils create, **deconstruct** and refine an increasingly complex range of **programs** to accomplish specific goals. Pupils create **programs** which store, change and report **variables** (e.g. scores in a game or time) and can include multiple **variables** in a single **program**. Pupils can explain why they have structured **algorithms** as they have and describe the effect this has on a **program**.		