Computing Feedback Prompts

KS	Substantive Knowledge	Disciplinary Knowledge
	Computer Science	
1	Trainees understand and teach effectively the concepts of computational thinking: algorithms, decomposition, abstraction, pattern recognition, logical reasoning. Trainees ensure the use of programmable toys is purposeful to develop computational thinking. Trainees use appropriate pedagogical approaches to teach children how to write simple programs and correct errors in their programs/ algorithms through debugging.	Unplugged activities can be used to explore computational thinking concepts. Computational Thinking concepts can be developed through plugged activities using resources such as Beebots, roamers, Code-a-pillar and/ or other programmable toys. Trainees know that children can write an algorithm before or during programming the toy using algorithm cards or symbols, depending on their developmental stage.

2	Trainees are aware of programming planning/ design strategies and select appropriate approaches to help children decompose simple problems and develop plans for developing a solution (algorithm). Trainees understand and teach effectively the programming concepts: sequence, selection, repetition, variables, so that children write programs based on their planning. Trainees use logical reasoning to support children testing their programs and debugging them. Trainees use physical computing devices (Codebug, Ozobot, Microbit, Crumble, Ohbots, Sphero, etc.) to use sensors to detect inputs and produce an output (lights, sound, motors). They understand that an input gives data to the computer (keyboard, mouse, sensor), which the computer processes and stores, then produces an output for the user (screen, printer, lights, motors, sound). Trainees understand physical computing devices are simulations of real-world systems, such as traffic lights, automatic doors, burglar alarms, automatic lights.	Appropriate pedagogical strategies are used to teach programming, based on current research, which reduces cognitive load: · PRIMM – Predict, Run, Investigate, Modify, Make · Use – Modify- Create · Parson's problems · Tinkering · Live coding · Paired programming (navigator/ driver swapped at mid-point).

	Information Technology	
1	Trainees use and teach children to use appropriate software and hardware for the required task and purpose. Trainees support children appropriately to learn how to access the computer resources.	Trainees know that they should use developmentally appropriate hardware and software for children.
2	Trainees know how to combine materials from a variety of software to form a new composite piece of work (e.g. combining sound with an animation, images and text on a website, a graph integrated into a presentation, a podcast on blog). Trainees have a sound knowledge of features of software and hardware and which are most appropriate for use given task requirements (e.g. drawing in a vector graphics program and importing this into a presentation, instead of drawing in the presentation).	Trainees plan appropriate learning objectives for the Information Technology strand, using cross-curriculum opportunities to contextualise skills, knowledge and understanding of Information Technology. Trainees know how to meet the requirements of the Information Technology strand across a range of hardware and software.
	Digital Literacy	
1	Trainees can select and adapt age appropriate resources to teach children about online safety and digital citizenship. Trainees understand that online safety is related to safeguarding and how to report safeguarding concerns which emerge in the online world.	Trainees demonstrate awareness that online safety and digital citizenship education needs to be in partnership with parents.

2	Trainees understand that, as they mature, children need to be prepared effectively to take on more responsibility for their technology use and to be able to report concerns to the appropriate authorities. Trainees understand that technology children use is ever-changing and using current, age-appropriate resources from reliable sources (e.g. ThinkuKnow, Project Evolve, ChildNet) is important to maintain currency to children's evolving technology use. Trainees know and can teach children how to search the Web efficiently and effectively using advanced search tools. Trainees understand and can teach children that search engine results are generated by complex algorithms which display and rank results according to the algorithm of the search engine and the data it processes, including previous searches and interests of the user. Trainees understand that computer devices are connected together through networks using networking technologies. The Internet are the devices and cables which physically connect computer technologies, while the World Wide Web is the software which allows people to use services over the physical infrastructure. The distributed nature of the Internet means it is resilient – data packets can be sent across multiple routes. Trainees know that computers use binary to process data. Data is frequently too large to send as a complete unit (e.g. a picture	Trainees understand the importance of applying criticality to information sources, particularly those from the Web. They can suggest ways to test the reliability and trustworthiness of information found on the Web to children. They can apply these same lessons of criticality to potential fake websites, online hoaxes and scams, or fraudsters seeking personal data. They are aware that the methods used by fraudsters evolve and criticality is an important tool. Trainees are aware that technology is not without bias. Technologies such as Artificial Intelligence are designed, programmed and tested by people who have conscious and unconscious biases which impact on how they operate and the data generated (e.g. facial recognition, driverless cars, social media labelling, content generation). Children should be aware of how technologies are developed, so they are aware of the human element.

	or video) over the Internet, so the data is split into smaller packets of data which are reassembled when they reach their destination.	