

Year 6 Teach Computing - Computing systems and networks – Communication and Collaboration

In year 3, the Teach Computing scheme introduced children to what digital devices are, what a network is, and built up their familiarity with technical terminology such as input/output. They also learned about network hardware such as switches and routers; this was explored in more depth in year 4 to reinforce this learning. Year 5's work focused on how information transferred from small scale to larger systems. In these lessons, we will be looking at how Internet addresses work and the way in which data is transferred in packets. This is a short unit of work, to help top up the children's understanding of networking and introduce some new learning. For short term lesson plans, go to: <https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-communication> (login needed).

Adaptive teaching – Recommended tried and tested practise in these lessons:

Due to the nature of Computing lessons and the common 'firefighting' required in lessons with technical issues or children who are individually confused over what may be considered small stumbling blocks, it is recommended that teachers put time and effort into reinforcing the use of school-wide learning ethos and systems (for example, the use of the 4B's – brain, board, buddy, boss) to encourage children to try to solve their problems in the right way rather than going straight to the teacher, or lessons will quickly become unmanageable. It is also recommended to follow our school's use of the Rosenshine model of mastery teaching strategy and teach lessons in a series of stages, with short, simple tasks being set, and children who finish early can be given encouragement to support and 'lifeguard' other students. This has twofold benefits; the process of teaching others cements and secures pupils' own mastery as well as ensuring the teacher isn't overwhelmed with personal requests for help. If one-to-one support is unavailable for high need children, it is a good idea to make sure these children are sat next to or near a higher ability student who may act as peer support for them, and these children are monitored carefully throughout lessons to ensure they stay on task and understand each objective given. Ensure that any hardware support that is required for individual's SEND requirements are adjusted appropriately and are tied to those students' individual log ins (e.g. Zoom tools or screen tints for students with visual impairments etc). Teachers should have a knowledge of Pupil Premium children, particularly those who have been seen to struggle in Computing lessons, and these children should be monitored alongside those with SEND during lesson time to help ensure they access lessons along with the rest of the class.

Knowledge covered:

NC	Ladders Objectives
(2.1) Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	
(2.2) Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	
(2.3) Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	
(2.4) Understand computer networks including the Internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration.	
(2.5) Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	
(2.6) Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Y6 - IT3 (KPI) - I can select, use and combine a variety of software effectively (including internet services) to meet goals I have been set. Y6 - IT4 - I can combine several sources of information (eg. text, pictures, video, animation, sound) in my work to meet the goal I have been set. Y6 - IT5 - I can use software to collect, present, analyse and evaluate data appropriately (eg using a spreadsheet and/or a database). Y6 - IT6 - I can create and edit a presentation to convey meaning and include nonlinear hyperlinks in it (eg. PowerPoint/Sway/Keynote/Other). Y6 - IT7 - I can present data and information in a way that is easy to understand.
(2.7) Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	

Medium Term Lesson Plan:

Lesson 1	Internet addresses L.I I can explain the importance of internet addresses Y6 – IT1 Y6 – IT2 Y6 – IT3 (KPI) Y6 - IT4 Y6 – IT5 Y6 - IT7	S.C: I can recognise that data is transferred using agreed methods I can explain that internet devices have addresses I can describe how computers use addresses to access websites	<u>Key Questions:</u> *Prior knowledge* How do you use the Internet? How do you communicate successfully with someone in person? Have you heard the phrase 'IP address before?'	Children think about how communication happens successfully on a day to day basis. They are then informed about what the word 'protocol' means, which leads to explaining IP addresses. They are given an activity to remember a random number to encourage them to reflect on how we identify other things. They are shown what a DNS server does. Children reflect on what they have learned.
Lesson 2	Data packets L.I I can recognise how data is transferred across the internet Y6 – IT1 Y6 – IT2 Y6 – IT3 (KPI) Y6 - IT4 Y6 – IT5 Y6 - IT7	S.C: I can identify and explain the main parts of a data packet I can explain that data is transferred over networks in packets I can explain that all data transferred over the internet is in packets	<u>Key Questions:</u> *Prior knowledge* What did we learn last lesson about Internet addresses? Does the system we have created work? Other than text messages, what other forms of data are transferred over the Internet?	Go over the last lesson's learning with the children. Data packets are explained. Activity: Use information in the header and the data payload to arrange the packets on sheet into the correct order. Activity 2: Send messages in packets by creating a question no longer than 36 characters long. Children space themselves out across the classroom, passing data packets along. Activity 3: Reconstructing an image. Finally explain different parts of an IP address and why packets are given a header.