Year 3 – Connecting computers

Unit introduction

Learners will develop their understanding of digital devices, with an initial focus on inputs, processes, and outputs. They will also compare digital and non-digital devices. Next, learners will be introduced to computer networks, including devices that make up a network's infrastructure, such as wireless access points and switches. Finally, learners will discover the benefits of connecting devices in a network.

Software and Hardware requirements

Lesson 3 requires digital devices with a painting application. Lesson 6 includes a 'network tour', which involves learners identifying key parts of your school network. You will therefore need access to your school's server, switch, and wireless access points.

If you've adapted this unit to better suit your school, please share your adapted resources with fellow teachers in the STEM community. Alternatively, if this unit isn't quite right for your school, why not see if an adapted version which better suits has already been shared?

Overview of lessons

Lesson	Brief overview	Learning objectives
1 How does a digital device work?	This lesson introduces the concepts of input, process, and output and how to protect devices using secure passwords. These concepts are fundamental to all digital devices.	To explain how digital devices function • I can explain that digital devices accept inputs

		• I can explain that digital devices produce outputs • I can follow a process • I can explain what makes a secure password
2 What parts make up a digital device?	Learners will develop their knowledge of the relationship between inputs, processes, and outputs and apply it to devices and parts of devices that they will be familiar with from their everyday surroundings.	To identify input and output devices • I can classify input and output devices • I can describe a simple process • I can design a digital device
3 How do digital devices help us?	Learners will apply their learning from Lessons 1 and 2 by using programs in conjunction with inputs and outputs on a digital device. They will create two pieces of work with the same focus, using digital devices to create one piece of work, and non-digital tools to create the other. Learners will then compare and contrast the two approaches.	To recognise how digital devices can change the way that we work • I can explain how I use digital devices for different activities • I can recognise similarities between using digital devices and using non-digital tools • I can suggest differences between using digital devices and using non-digital tools
4 How am I connected?	Many digital devices are now connected to other digital devices, e.g. computers through wires, tablets through Wi-Fi, and smartphones through mobile phone networks. The benefit of connecting digital devices is that it allows information to be shared between users and systems.	To explain how a computer network can be used to share information • I can recognise different connections

	This lesson introduces the concept of connections and moving information between connected devices. Learners will learn to explain how and why computers are joined together to form networks.	• I can explain how messages are passed through multiple connections • I can discuss why we need a network switch
5 How are computers connected?	This lesson introduces key network components, including a server and wireless access points. Learners will examine each device's functionality and look at the benefits of networking computers.	To explore how digital devices can be connected • I can recognise that a computer network is made up of a number of devices • I can demonstrate how information can be passed between devices • I can explain the role of a switch, server, and wireless access point in a network
6 What does our school network look like?	Learners will further develop their understanding of computer networks. They will see examples of network infrastructure in a real-world setting and relate them to the activities in Lesson 5.	To recognise the physical components of a network • I can identify how devices in a network are connected together • I can identify networked devices around me • I can identify the benefits of computer networks

Subject knowledge and CPD opportunities

You will need an understanding of digital and non-digital devices. The key difference between them is that a digital device is capable of some processing, i.e. it has functions beyond being either on or off. You will also need to be familiar with the concept of input, process, output (IPO), which underpins all digital devices. You will need to understand that devices can have one input that leads to several outputs (e.g. starting a video, leads to outputs from the screen and the speaker) and that many inputs can lead to one output (e.g. using a mouse and a keyboard to produce a document).

You will need a basic understanding of how information (data) flows around a computer network, and how this benefits us. You will also need to know that a network switch manages the way in which data moves around a network. You will need to be familiar with the main parts of a school network, including the server, wireless access points, network switch, router, and output devices such as a printer or copier.

Continual Professional Development
Enhance your subject knowledge to teach this unit through the following free CPD:
- [Getting started in Year 3 – short course](#)
- [Teaching computing systems and networks to 5- to 11-year-olds](#)
- [Introduction to primary computing](#) [remote](#) or [face to face](#)

Teach primary computing certificate
To further enhance your subject knowledge, enrol on the [teach primary computing certificate](#). This will support you to develop your knowledge and skills in primary computing and gain the confidence to teach great lessons, all whilst earning a nationally recognised certificate!

Progression

This unit progresses learners' knowledge and understanding of technology by focusing on digital and non-digital devices, from the following units; [Technology around me Year 1](#) and [IT around us Year 2](#), and introducing the concept of computers connected together as a network. Following this unit, learners will explore the internet as a network of networks.

Common misconceptions

Learners may have misconceptions with classifying digital and non-digital devices. They should be aware that a digital device is capable of some processing, i.e. it has functions beyond being either on or off. When looking at inputs and outputs, learners may struggle to classify a tablet (iPad) as this can be identified as both an input and output.

When looking at networks, misconceptions may occur when identifying network devices. Be aware the images used are illustrative and are unlikely to be representative of the actual devices in your school network. The school network may differ from the unit, for example most school networks have one switch, although some larger schools have more, especially if they are split over more than one site, and schools may not have a server if they are using online platforms.

When looking at the internet, another misconception may be learners thinking that a Wi-Fi connection is an internet connection; this is wrong, it is just a wireless way of connecting to a network. Equally, learners may mention 3G, 4G, or 5G connections, which connect devices (usually smartphones) to the internet and not solely to a network.

Curriculum links

Computing
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- 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
- 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
- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

Education for a Connected World links
Privacy and Security
- I can describe simple strategies for creating and keeping passwords private.

Maths (Lesson 1)

- **Number and place value:** solve number problems and practical problems involving these ideas.

Art (Lesson 3)

- to improve their mastery of art and design techniques, including drawing, painting and sculpture with a range of materials [for example, pencil, charcoal, paint, clay]

Assessment

Formative assessment
Assessment opportunities are detailed in each lesson plan. The learning objectives and success criteria are introduced in the slide decks at the beginning of each lesson and then reviewed at the end. Learners are invited to assess how well they feel they have met the learning objective using thumbs up, thumbs sideways, or thumbs down.

Summative assessment
Please see the summative assessment document of multiple-choice questions for this unit. This can be downloaded as a paper copy, with answers, or in a digital format to be shared.

Attribution statement

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The original version can be made available on request via info@teachcomputing.org.