



Raspberry Pi

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.

You will need digital devices for learners to interact with during this unit. 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.

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. These concepts are fundamental to all digital devices.	To explain how digital devices function <ul style="list-style-type: none"> ● I can explain that digital devices accept inputs ● I can explain that digital devices produce outputs ● I can follow a process

<p>2 What parts make up a digital device?</p>	<p>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.</p>	<p>To identify input and output devices</p> <ul style="list-style-type: none"> ● I can classify input and output devices ● I can describe a simple process ● I can design a digital device
<p>3 How do digital devices help us?</p>	<p>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.</p>	<p>To recognise how digital devices can change the way that we work</p> <ul style="list-style-type: none"> ● 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
<p>4 How am I connected?</p>	<p>Many digital devices are now connected to other digital devices, eg 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.</p> <p>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.</p>	<p>To explain how a computer network can be used to share information</p> <ul style="list-style-type: none"> ● I can recognise different connections ● I can explain how messages are passed through multiple connections ● I can discuss why we need a network switch

<p>5 How are computers connected?</p>	<p>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.</p>	<p>To explore how digital devices can be connected</p> <ul style="list-style-type: none"> ● 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
<p>6 What does our school network look like?</p>	<p>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.</p>	<p>To recognise the physical components of a network</p> <ul style="list-style-type: none"> ● 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

Progression

This unit progresses learners’ knowledge and understanding of technology by focusing on digital and non-digital devices, and introducing the concept of computers connected together as a network. Following this unit, learners will explore the internet as a network of networks.

Please see the learning graph for this unit for more information about progression.

Curriculum links

[National 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

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 opportunities are highlighted in each of the lesson plan documents. For summative assessment, please see the summative assessment document of multiple choice questions for this unit.

Subject knowledge

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, ie 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 (eg starting a video leads to outputs from the screen and the speaker) and that many inputs can lead to one output (eg 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.

Enhance your subject knowledge to teach this unit through the following training opportunities:

Online training courses

- [Raspberry Pi Foundation online training courses](#)

Face-to-face courses

- [National Centre for Computing Education face-to-face training courses](#)

Resources are updated regularly — the latest version is available at: ncce.io/tcc.

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