

Computing Long Term and Medium Term Plans – Year Two

	Reception	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Autumn	Awesome Autumn	Programming MGL*	CM Digital Photography PE – Self-Image		CSN The Internet PE – Online Rep'		D & I Spreadsheets PE – Online Info
	Winter Warmers	D & I Grouping Data PE – Priv & Sec'	Programming MGL*	CM Desktop Publishing PE – Copyright		CSN Sharing Info' PE – Online Rel'	
Spring	Spring Time		D & I Pictograms PE – Priv & Sec'	Programming MGL*	CM Photo Editing PE – Copyright Self-Image		CSN Communication PE – Online Rep'
		CSN Technology Around Us PE – Well-Being		D & I Branching Databases PE – Online Info'	Programming MGL*	CM Vector Drawing PE – Copyright	
Summer	Summer Fun		CSN IT Around Us PE – Well-Being		D & I Data Logging PE – Online Info'	Programming MGL*	CM Web Page Creation PE – Copyright Online Rel'
		CM Digital Writing PE – Self-Image		CSN Connecting Computers PE – Priv & Sec'		D & I Flat-file Databases PE – Online Info'	Programming MGL*
Ongoing Skills		Project Evolve – Safer Internet Day Software & Keyboard/Tablet Skills					

Autumn 1: Year 2 – Digital photography*

Unit introduction

Through the lessons in this unit, learners will learn to recognise that different devices can be used to capture photographs and will gain experience capturing, editing, and improving photos. Finally, they will use this knowledge to recognise that images they see may not be real.

Overview of lessons

Lesson	Brief overview	Learning objectives
1. Devices ncce.io/cm2p-1-p	This lesson introduces the concept that many devices can be used to take photographs and that we choose the device for many different reasons. Learners will then begin to capture their own photographs.	To know what devices can be used to take photographs • I can sort devices into old and new • I can talk about how to take a photograph • I can capture digital photos and talk about my experience
2. Landscape or portrait? ncce.io/cm2p-2-p	A photograph can be taken in either portrait or landscape format. In this lesson, learners explore taking photographs in both portrait and landscape formats and explore the reasons why a photographer may favour one over the other.	To use a digital device to take a photograph • I can explain the process of taking a good photograph • I can take photos in both landscape and portrait format

		• I can explain why a photo looks better in portrait or landscape format
3. What makes a good photograph? ncce.io/cm2p-3-p	A photograph is composed by a photographer. In this lesson, learners discover what constitutes good photography composition and put this into practice by composing and capturing photos of their own.	To describe what makes a good photograph • I can identify what is wrong with a photograph • I can discuss how to take a good photograph • I can improve a photograph by retaking it
4. Lighting and focus ncce.io/cm2p-4-p	Lighting and focus are important aspects of good photography composition. In this lesson, learners investigate the effect that good lighting has on the quality of the photos they take and explore what effect using the camera flash and adding an artificial light source have on their photos. They also learn how the camera autofocus tool can be used to make an object in an image stand out.	To decide how photographs can be improved • I can explore the effect that light has on a photo • I can experiment with different light sources • I can focus on an object
5. Effects ncce.io/cm2p-5-p	This lesson introduces the concept of simple image editing. Learners are introduced to the Pixlr image editing software and use the 'Adjust' tool to change the colour effect of an image.	To use tools to change an image • I can recognise that images can be changed • I can use a tool to achieve a desired effect • I can explain my choices

6. Is it real? ncce.io/cm2p-6-p	Images can be changed for a purpose. Learners are introduced to a range of images that have been changed in different ways and through this, develop an awareness that not all images they see are 'real'. To start the lesson, learners are first challenged to take their best photograph by applying the photography composition skills that they have developed throughout the unit.	To recognise that images can be changed • I can apply a range of photography skills to capture a photo • I can recognise which images have been changed • I can identify which images are real and which have been changed
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Progression

[Learning graph](https://ncce.io/cm2p-lg) (ncce.io/cm2p-lg)

Curriculum links

[Computing national curriculum links](#)

- Use technology purposefully to create, organise, store, manipulate, and retrieve digital content

[Art and design](#)

- To develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form, and space

[Education for a Connected World links](#)

- To identify that some images are not real (fake)

Assessment

Formative assessment

Assessment opportunities are detailed in each lesson plan. The learning objective and success criteria are introduced in the slides 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.

Subject knowledge

- Knowledge of photography devices, including historical devices
- You should be familiar with the basic principles of photography, including composition, framing, focus, and lighting
- Lessons 5 and 6 use an online photo editing tool, Pixlr, and knowledge of using photo editing software to apply filters to images is required to use this effectively; you should also be familiar with saving and downloading images

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

Online training courses

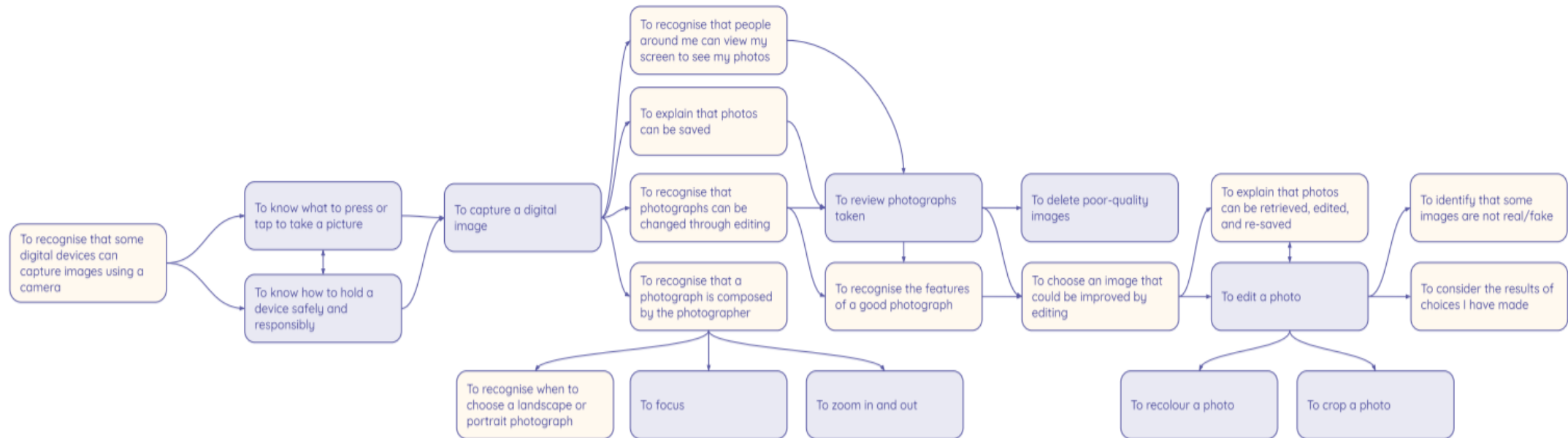
- [Raspberry Pi Foundation online training courses](#)

Face-to-face courses

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

Learning graph

Year 2 – Creating media – Digital photography



MGL UNIT – Autumn 2: Year 2 – Programming A – Robot algorithms

Unit introduction

This unit develops pupils' understanding of instructions in sequences and the use of logical reasoning to predict outcomes. Pupils will use given commands in different orders to investigate how the order affects the outcome. Pupils will also learn about design in programming. They will develop artwork and test it for use in a program. They will design algorithms and then test those algorithms as programs and debug them.

Overview of lessons

Lesson	Brief overview	Learning objectives
1 Giving instructions	In this lesson, pupils will follow instructions given to them and give instructions to others. Pupils will consider the language used to give instructions and how that language needs to be clear and precise. Pupils will combine several instructions into a sequence that can then be issued to another pupil to complete. Pupils will then consider this clear and precise set of instructions in relation to an algorithm, and they will think about how computers can only follow clear and unambiguous instructions.	To describe a series of instructions as a sequence • I can follow instructions given by someone else • I can choose a series of words that can be enacted as a sequence • I can give clear and unambiguous instructions
2 Same but different	This lesson focuses on sequences, and guides pupils to consider the importance of the order of instructions within a sequence. Pupils will create several short sequences using the same commands in different	To explain what happens when we change the order of instructions

	orders. They will then test these sequences to see how the different orders affect the outcome.	• I can create different algorithms for a range of sequences (using the same commands) • I can use an algorithm to program a sequence on a floor robot • I can show the difference in outcomes between two sequences that consist of the same commands
3 Making predictions	In this lesson, pupils will use logical reasoning to make predictions. They will follow a program step by step and identify what the outcome will be.	To use logical reasoning to predict the outcome of a program (series of commands) • I can follow a sequence • I can predict the outcome of a sequence • I can compare my prediction to the program outcome
4 Mats and routes	In this lesson, pupils will design, create, and test a mat for a floor robot. This will introduce the idea that design in programming not only includes code and algorithms, but also artefacts related to the project, such as artwork and audio.	To explain that programming projects can have code and artwork • I can explain the choices I made for my mat design • I can identify different routes around my mat • I can test my mat to make sure that it is usable
5 Algorithm design	In this lesson, pupils will design algorithms to move their robot around the mats that they designed in Lesson 4. As part of the design process, pupils will outline what their task is by identifying the starting and	To design an algorithm • I can explain what my algorithm should

	finishing points of a route. This outlining will ensure that pupils clearly understand what they want their program to achieve.	achieve • I can create an algorithm to meet my goal • I can use my algorithm to create a program
6 Debugging	In this lesson, pupils will take on a larger programming task. They will break the task into chunks and create algorithms for each chunk. This process is known as 'decomposition' and is covered further in key stage 2. Pupils will also find and fix errors in their algorithms and programs. This is known as 'debugging'.	To create and debug a program that I have written • I can plan algorithms for different parts of a task • I can test and debug each part of the program • I can put together the different parts of my program

Progression

In advance of the lessons in this Year 2 unit, pupils should have had some experience of creating short programs and predicting the outcome of a simple program. This unit progresses students' knowledge and understanding of algorithms and how they are implemented as programs on digital devices. Pupils will spend time looking at how the order of commands affects outcomes. Pupils will use this knowledge and logical reasoning to trace programs and predict outcomes.

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

Curriculum links

[National curriculum links](#)

- Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions
- Create and debug simple programs
- Use logical reasoning to predict the behaviour of simple programs
- Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Assessment

Formative assessment

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

Subject knowledge

This unit focuses on developing pupils' understanding of computer programming. It highlights that algorithms are a set of clear, precise, and ordered instructions, and that a computer program is the implementation of an algorithm on a digital device. The unit also introduces reading 'code' to predict what a program will do. Pupils will engage in aspects of program design, including outlining the project task and creating algorithms.

When programming, there are four levels that can help describe a project, known as 'levels of abstraction'. Research suggests that this structure can support pupils in understanding how to create a program and how it works:

- Task — what is needed
- Design — what it should do
- Code — how it is done
- Running the code — what it does

Spending time at the task and design levels before engaging in writing code aids pupils in assessing the achievability of their programs and reduces the cognitive load for pupils during programming.

Pupils will move between the different levels throughout the unit, and this is highlighted within each lesson plan.

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

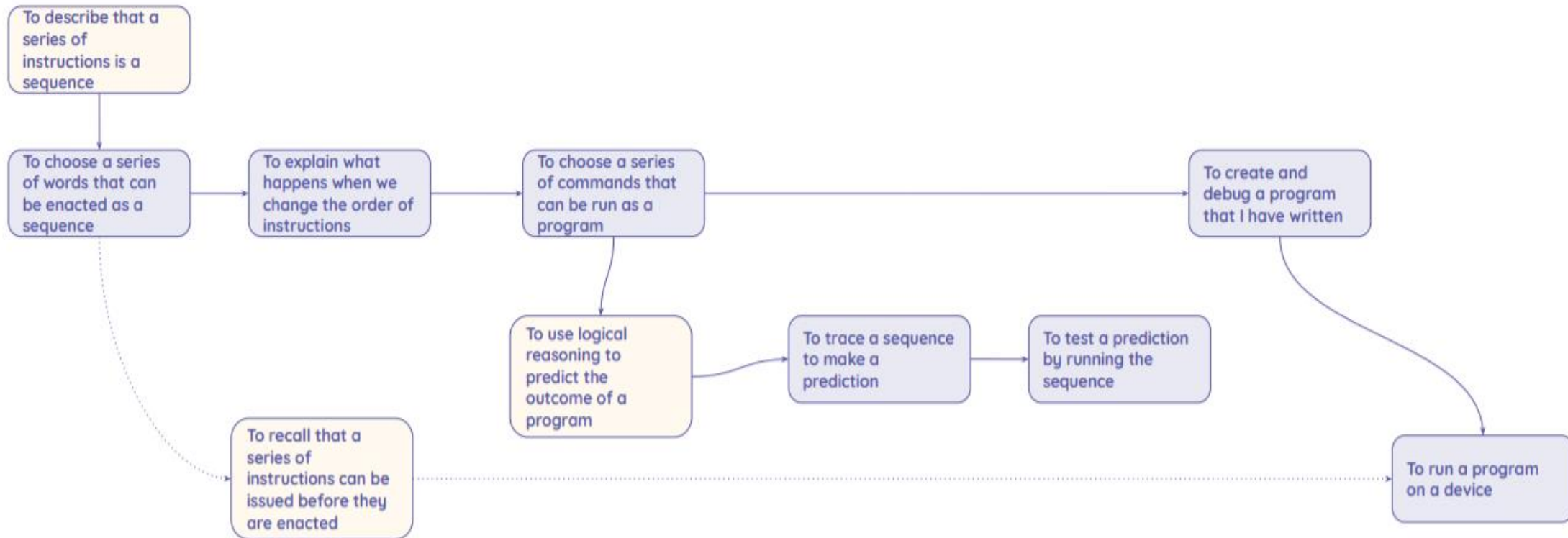
Online training courses

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

Face-to-face courses

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

Learning graph Year 2 – Robot algorithms



Spring 1: Year 2 – Data & Information - Pictograms

Unit introduction

This unit introduces the learners to the term 'data'. Learners will begin to understand what data means and how this can be collected in the form of a tally chart. They will learn the term 'attribute' and use this to help them organise data. They will then progress onto presenting data in the form of pictograms and finally block diagrams. Learners will use the data presented to answer questions.

Overview of lessons

Lesson	Brief overview	Learning objectives
1 Counting and comparing	During this lesson learners will begin to understand the importance of organising data effectively for counting and comparing. They will create their own tally charts to organise data, and represent the tally count as a total. Finally, they will answer questions comparing totals in tally charts using vocabulary such as 'more than' and 'less than'.	To recognise that we can count and compare objects using tally charts • I can record data in a tally chart • I can represent a tally count as a total • I can compare totals in a tally chart
2 Enter the data	During this lesson learners will become familiar with the term 'pictogram'. They will create pictograms manually and then progress to creating them using a computer. Learners will begin to understand the advantages of using computers	To recognise that objects can be represented as pictures

	rather than manual methods to create pictograms, and use this to answer simple questions.	• I can enter data onto a computer • I can use a computer to view data in a different format • I can use pictograms to answer simple questions about objects
3 Creating pictograms	During this lesson learners will think about the importance of effective data collection and will consider the benefits of different data collection methods: why, for example, we would use a pictogram to display the data collected. They will collect data to create a tally chart and use this to make a pictogram on a computer. Learners will explain what their finished pictogram shows by writing a range of statements to describe this.	To create a pictogram • I can organise data in a tally chart • I can use a tally chart to create a pictogram • I can explain what the pictogram shows
4 What is an attribute?	During this lesson learners will think about ways in which objects can be grouped by attribute. They will then tally objects using a common attribute and present the data in the form of a pictogram. Learners will answer questions based on their pictograms using mathematical vocabulary such as 'more than'/'less than' and 'most'/'least'.	To select objects by attribute and make comparisons • I can tally objects using a common attribute • I can create a pictogram to arrange objects by an attribute • I can answer 'more than'/'less than' and 'most/least' questions about an attribute
5 Comparing people	During this lesson learners will understand that people can be described by attributes. They will practise using attributes to describe images of people and the other learners in the class. The learners will collect data needed to organise	To recognise that people can be described by attributes • I can choose a suitable attribute to

	people using attributes and create a pictogram to show this pictorially. Finally, learners will draw conclusions from their pictograms and share their findings.	compare people • I can collect the data I need • I can create a pictogram and draw conclusions from it
6 Presenting information	During this lesson learners will understand that there are other ways to present data than using tally charts and pictograms. They will use a pre-made tally chart to create a block diagram on their device. Learners will then share their data with a partner and discuss their findings. They will consider whether it is always OK to share data and when it is not OK. They will know that it is alright to say no if someone asks for their data, and how to report their concerns.	To explain that we can present information using a computer • I can use a computer program to present information in different ways • I can share what I have found out using a computer • I can give simple examples of why information should not be shared

Progression

This unit progresses students' knowledge and understanding of grouping data.

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

Curriculum links

[National curriculum links](#)

Computing

- use technology purposefully to create, organise, store, manipulate and retrieve digital content
- use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies

Maths

Building on Year 1 number and place value:

- Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: 'equal to', 'more than', 'less than' ('fewer'), 'most', 'least'

Year 2

- interpret and construct simple pictograms, tally charts, block diagrams and simple tables
- ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity
- ask and answer questions about totalling and comparing categorical data

Notes and guidance: Pupils record, interpret, collate, organise and compare information (for example, using many-to-one correspondence in pictograms with simple ratios 2, 5, 10).

[Education for a Connected World links](#)

Self image and identity

- I can recognise that I can say 'no'/'please stop'/'I'll tell'/'I'll ask' to somebody who asks me to do something that makes me feel sad, embarrassed or upset

- I can explain how this could be either in real life or online
- If something happens that makes me feel sad, worried, uncomfortable, or frightened I can give examples of when and how to speak to an adult I can trust

Health, wellbeing and lifestyle

- I can identify rules that help keep us safe and healthy in and beyond the home when using technology
- I can give some simple examples

Privacy and security

- I can identify some simple examples of my personal information (e.g. name, address, birthday, age, location)
- I can describe the people I can trust and can share this with; I can explain why I can trust them
- I can recognise more detailed examples of information that is personal to me (e.g. where I live, my family's names, where I go to school)

Assessment

Formative assessment

- Assessment opportunities are detailed in each lesson plan. The learning objective and success criteria are introduced in the slide deck 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.

Subject knowledge

This unit builds on prior learning from the Year 1 unit 'Grouping data'.

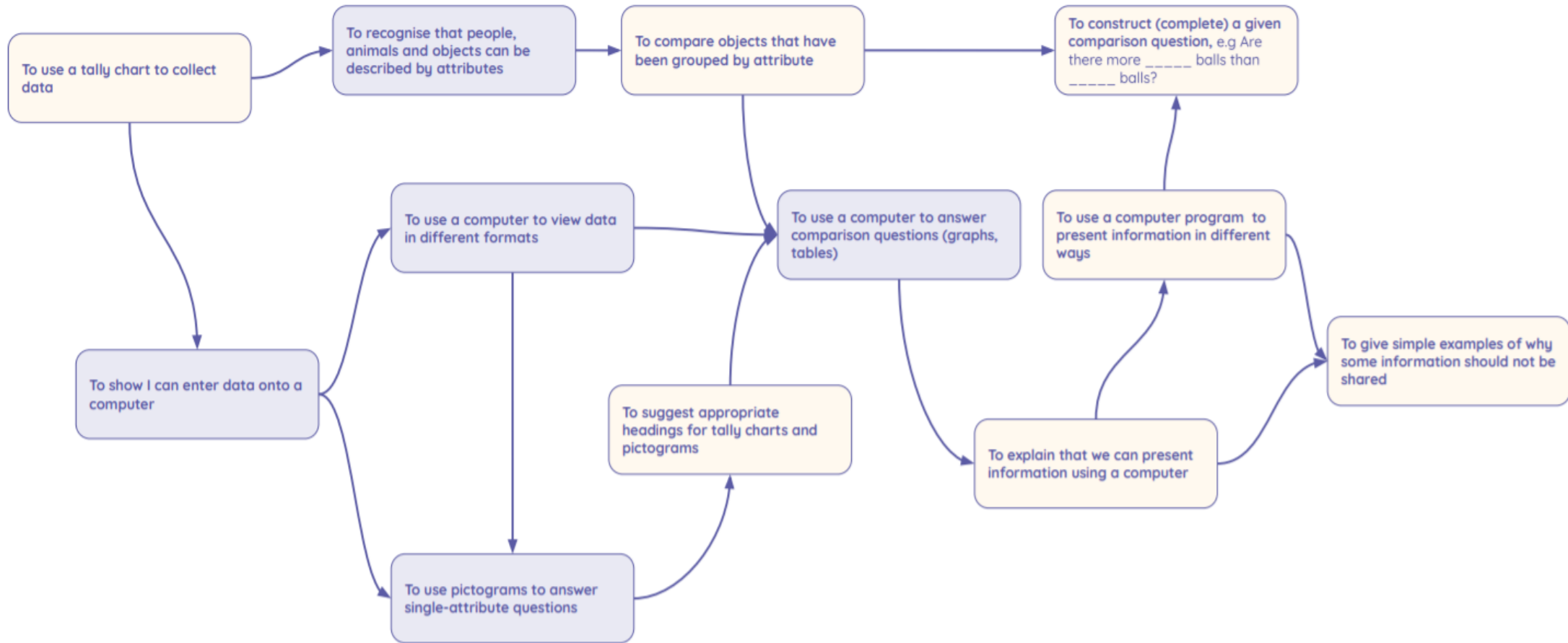
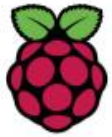
Enhance your subject knowledge to teach this unit through the following training opportunities:

Online training courses

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

Face-to-face courses

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



Summer 1: Year 2 – Computing systems and networks - Information Technology around us

Unit introduction

In this unit, learners will look at information technology at school and beyond, in settings such as shops, hospitals, and libraries. Learners will investigate how information technology improves our world, and they will learn about using information technology responsibly.

Overview of lessons

Lesson	Brief overview	Learning objectives
1 What is information technology? ncce.io/csn2-1-p	This lesson develops learners' understanding of what information technology (IT) is. They will identify devices which are computers and consider how IT can help us both at school and at home.	To recognise the uses and features of information technology • I can identify examples of computers • I can describe some uses of computers • I can identify that a computer is a part of information technology

2 Where have we seen information technology in the home? ncce.io/csn2-2-p	This lesson encourages learners to consider common uses of information technology in a context that they are familiar with beyond school.	To identify information technology in the home • I can explain the purpose of information technology in the home • I can open a file • I can move and resize images
3 Where have we seen information technology in the world? ncce.io/csn2-3-p	Having considered the use of information technology in the familiar context of the home, learners will explore IT in other environments that they may have experienced.	To identify information technology beyond school • I can find examples of information technology • I can talk about uses of information technology • I can compare types of information technology
4 How does IT improve our world? ncce.io/csn2-4-p	In the previous lesson, learners looked at where IT is likely to be found and considered where it is less likely to be found. This lesson focuses on the specific use of IT in a shop.	To explain how information technology benefits us • I can demonstrate how information technology is used in a shop • I can recognise that information technology can be connected • I can explain how information technology helps people

5 Demonstrate safe use of information technology ncce.io/csn2-5-p	In this lesson, learners will consider how they use different forms of information technology safely, in a range of different environments.	To show how to use information technology safely • I can list different uses of information technology • I can recognise how to use information technology responsibly • I can say how those rules/guides can help me
6 Using information technology responsibly ncce.io/csn2-6-p	In this lesson, learners will think about the choices that are made when using information technology, and the responsibility associated with those choices.	To recognise that choices are made when using information technology • I can identify the choices that I make when using information technology • I can explain simple guidance for using information technology in different environments and settings • I can enjoy a variety of activities

Progression

Learners should have an understanding of what technology is and where it is used in a school context. They should also be familiar with the technology available in their own school setting.

This unit progresses students' knowledge and understanding of technology and how they interact with it beyond school. Learners will also build on their knowledge of using technology safely and responsibly, and begin to consider the implications of the choices that they make.

[Key Stage 1 learning graph](https://ncce.io/csn2-og) (ncce.io/csn2-og)

Curriculum links

[National curriculum links](#)

- Recognise common uses of information technology beyond school

[Education for a Connected World links](#)

Health, well-being and lifestyle

- I can identify rules that help keep us safe and healthy in and beyond the home when using technology.
- I can give some simple examples.

Assessment

Formative assessment

Assessment opportunities are detailed in each lesson plan. The learning objective and success criteria are introduced in the slide deck 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.

Subject knowledge

Lesson 1: You should have a clear understanding of devices which can be described as information technology (IT). For younger learners, IT can be seen as computers, devices with computers inside, or things made to work with computers.

Lesson 2: You should have a clear understanding of devices which can be described as IT. For younger learners, IT can be seen as computers, devices with computers inside, or things made to work with computers.

Lesson 3: You will need to understand where technology can be found in shops and how it can be used. You should also know which devices can work together, for example:

- Barcode, barcode scanner, till
- Bank card, chip and PIN card reader, till
- Traffic light, crossing button, crossing signal

Lesson 4: You can find some useful information and a short video about barcodes at www.waspbarcode.com/buzz/barcode

Lesson 5: You should know your school's rules regarding the safe use of technology and be familiar with [Education for a Connected World](#).

Lesson 6: You will need to be familiar with the Digital 5 a Day: www.childrenscommissioner.gov.uk/our-work/digital/5-a-day

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](#)

