

Computing Long Term and Medium Term Plans – Year Four

	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 4 – CSN - The internet

Unit introduction

During this unit learners will apply their knowledge and understanding of networks, to appreciate the internet as a network of networks which need to be kept secure. They will learn that the World Wide Web is part of the internet, and be given opportunities to explore the World Wide Web for themselves to learn about who owns content and what they can access, add, and create. Finally, they will evaluate online content to decide how honest, accurate, or reliable it is, and understand the consequences of false information.

Overview of lessons

Lesson	Brief overview	Learning objectives
1. Connecting networks ncce.io/csn4-1-p	Learners will explore how a network can share messages with another network to form the internet. They will consider some of the network devices involved in this, such as routers, and then discuss what we should keep in and out of a network to keep safe.	To describe how networks physically connect to other networks • I can describe the internet as a network of networks • I can demonstrate how information is shared across the internet • I can discuss why a network needs protecting
2. What is the internet made of? ncce.io/csn4-2-p	Learners will describe parts of a network and how they connect to each other to form the internet. They will use this to help explain how the internet lets us view the World Wide Web and recognise that the World Wide Web is part of the internet which contains websites and web pages.	To recognise how networked devices make up the internet • I can describe the different networked devices and how they connect • I can explain how the internet allows us to view the World Wide Web

		• I can recognise that the World Wide Web is the part of the internet that contains websites and web pages
3. Sharing information ncce.io/csn4-3-p	Learners will explore what can be shared on the World Wide Web and where websites are stored. They will also explore how the World Wide Web can be accessed on a variety of devices.	To outline how websites can be shared via the World Wide Web • I can explain the types of media that can be shared on the World Wide Web (WWW) • I can describe where websites are stored when uploaded to the WWW • I can describe how to access websites on the WWW
4. What is a website? ncce.io/csn4-4-p	Learners will analyse the contents of websites, before designing their own website, offline. They will consider the content they would like to include on a website of their own, and then decide how they could create that content. They will then use an existing website to create some of their own content online, using tools introduced in Year 2.	To describe how content can be added and accessed on the World Wide Web • I can create media which can be found on websites • I can recognise that I can add content to the WWW • I can explain that new content can be created online
5. Who owns the web? ncce.io/csn4-5-p	Learners will explore who owns the content on websites. They will explore a variety of websites, investigating what they can and cannot do with the content on them. They will also relate this to principles of ownership and sharing in the real world.	To recognise how the content of the WWW is created by people • I can explain that websites and their content are created by people • I can suggest who owns the

		content on websites • I can explain that there are rules to protect content
6. Can I believe what I read? ncce.io/csn4-6-p	In this lesson, learners will gain an appreciation of the fact that not everything they see on the internet is true, honest, or accurate. They will review images and decide they may not be real, before conducting a web search which will return ambiguous and sometimes misleading results, looking for why this is the case. Finally, learners will complete a practical activity, demonstrating how quickly information can spread, beyond your own control.	To evaluate the consequences of unreliable content • I can explain that not everything on the World Wide Web is true. • I can explain why some information I find online may not be honest, accurate, or legal. • I can explain why I need to think carefully before I share or reshare content

Progression

This unit progresses students' knowledge and understanding of networks in Year 3. In Year 5, they will continue to develop their knowledge and understanding of computing systems and online collaborative working.

Year 3 learning graph (ncce.io/csn4-lg)

Curriculum links

[National curriculum links](#)

Computing

- 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

PSHE (Lesson 6)

- Evaluating content for honesty and accuracy

Art (Lesson 3)

- To improve their mastery of art and design techniques, including drawing, painting, and sculpture with a range of materials

Assessment

Formative assessment

Assessment opportunities are detailed in each lesson plan. The learning objectives 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.

Summative assessment

There are ten multiple choice questions in the quiz at the end of the unit. The questions are drawn from all six lessons.

- Year 4 multiple choice questions (ncce.io/csn4-saq)
- Year 4 multiple choice answers (ncce.io/csn4-saa)

Subject knowledge

Lesson 1:

Knowledge of computer networks is required for this lesson. It builds on concepts introduced in the Year 3 Computer systems and networks unit, in particular, the definition of a network which is covered in Lesson 4.

Lesson 2:

This lesson builds on Year 3, Computing systems and networks, in particular the parts of a network, covered in Lessons 4 and 5.

You will need an understanding of how data is routed around the internet. Some of the concepts covered in this lesson are explained in ‘A Packet’s Tale’ (a YouTube video): https://www.youtube.com/watch?v=ewrBaIT_eBM

You will also need a clear understanding that the World Wide Web is part of the internet — this is explained in this video: <https://www.bbc.co.uk/newsround/47523993>

Lesson 3:

You will need an understanding of where websites are stored, this is also explained in 'A Packet's Tale' (a YouTube video):

https://www.youtube.com/watch?v=ewrBaIT_eBM

Lesson 4:

An understanding of the elements common to many websites (text content, images, video, etc.). A knowledge of websites which can be used to generate content on the World Wide Web, in particular Chrome Music Lab.

Lesson 5:

A knowledge of copyright and the reasons for it. A useful short summary is here: <https://www.gov.uk/copyright> and a useful guide to creative commons:

<https://creativecommons.org/licenses/>

Lesson 6

An awareness that there is a high volume of inaccurate, misleading, or false content on the internet. An understanding that search results are influenced by adverts and sponsored content. An awareness of how quickly information spreads around the World Wide Web.

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

Online training courses

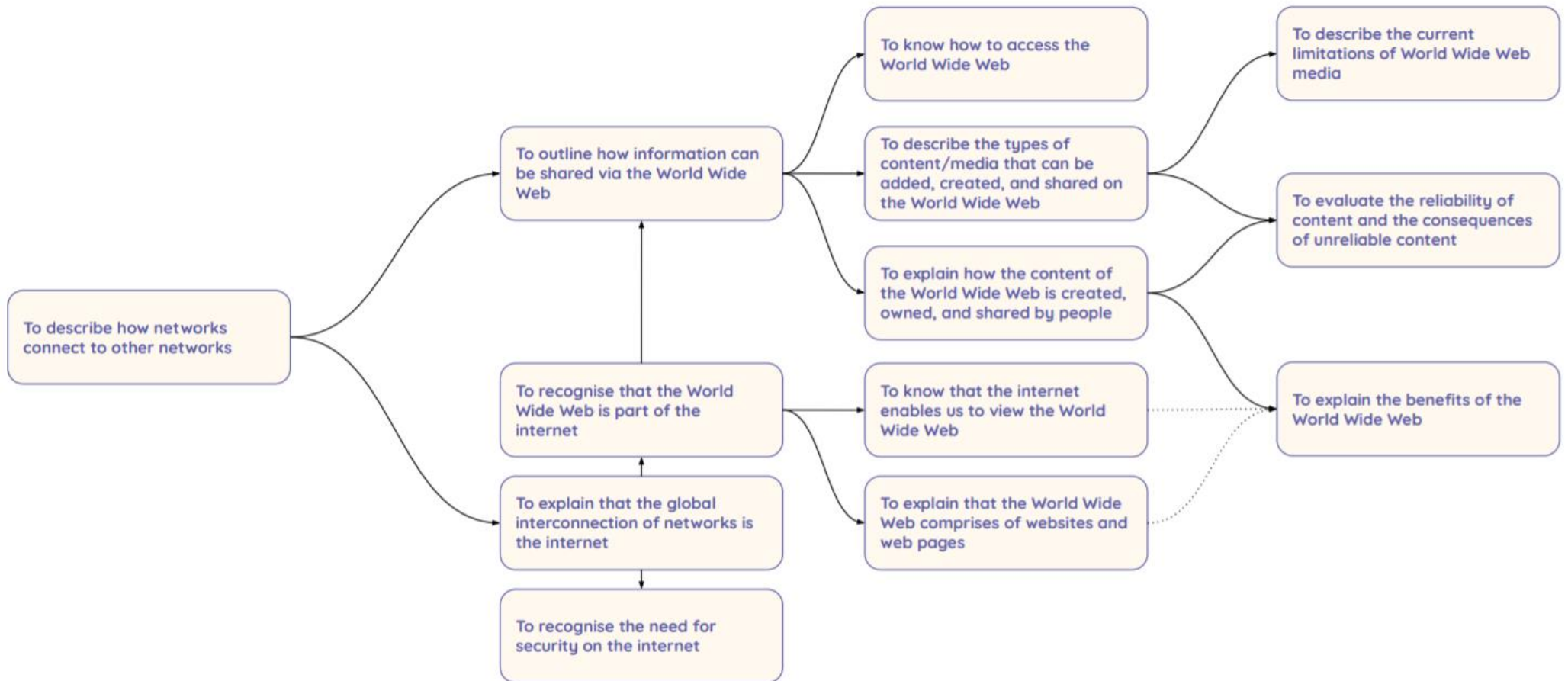
- [Raspberry Pi Foundation online training courses](#)

Face-to-face courses

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



Learning graph
Year 4 – Computer systems and networks – The internet



Spring 1: Year 4 – Photo editing*

Unit introduction

In this unit, learners will develop their understanding of how digital images can be changed and edited, and how they can then be resaved and reused. They will consider the impact that editing images can have, and evaluate the effectiveness of their choices.

Overview of lessons

Lesson	Brief overview	Learning objectives
1 Changing digital images	In this lesson, learners will be introduced to the online editor, and changes that can be made to images using a range of tools. They will look at changing the composition of images using the 'crop' tool, and evaluate the effect that this can have on an image.	To explain that digital images can be changed • I can identify changes that we can make to an image • I can explore how images can be changed in real life • I can explain the effect that editing can have on an image
2 Changing the composition of images	In this lesson, learners will identify changes that have been made to edited images. They will search for and save images from a copyright-free website. Learners will then use an image editor to make a new image composition linked to a cross-curricular theme.	To change the composition of an image • I can explain what has changed in an edited image • I can change the composition of an image by selecting parts of it • I can consider why someone might want to change the composition of an image
3 Changing images for	In this lesson, learners will look at the effect that different colours and filters can have on an image. They will choose appropriate effects to fit a scenario, and	To describe how images can be changed

different uses	explain how they made their choices. They will then edit the same original image using different effects to suit two different scenarios, and compare the two versions.	for different uses • I can talk about changes made to images • I can choose effects to make my image fit a scenario • I can explain why my choices fit a scenario
4 Retouching images	This lesson is based on editing images by using retouching tools. Learners will consider why people may choose to retouch images, and the positive and negative effects that retouching can have on images. They will use retouching tools to improve images, and consider which tools are appropriate for retouching.	To make good choices when selecting different tools • I can identify how an image has been retouched • I can give examples of positive and negative effects that retouching can have on an image • I can choose appropriate tools to retouch an image
5 Fake images	This lesson is based on the concept of fake images. Learners will sort images into 'fake' and 'real', and give reasons for their decisions. They will create their own fake images and reflect on how easy it is to digitally alter images, and what this might mean for the images that they see around them.	To recognise that not all images are real • I can sort images into 'fake' or 'real' and explain my choices • I can combine parts of images to create new images • I can talk about fake images around me
6 Making and evaluating a publication	This lesson is the final lesson in the unit on photo editing. Learners will use the 'fake' image that they created in lesson 5 to make a publication designed to advertise their imaginary place. They will add elements such as text, shapes, and borders. They will design a survey for gaining feedback on their work, and compare their completed publications with the original images.	To evaluate how changes can improve an image • I can consider the effect of adding other elements to my work • I can compare the original image with my completed publication • I can evaluate the impact of my publication on others through feedback

Progression

Learners should have experience of making choices on a tablet/computer. They should be able to navigate within an application.

This unit progresses students' skills through editing digital images and considering the impact that editing can have on an image. Learners will also consider how editing can be used appropriately for different scenarios, and create and evaluate 'fake' images, combining all of their new skills.

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

Curriculum links

[Computing national curriculum links](#)

- Use search technologies effectively
- 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](#)

Self-image and identity

- I can describe ways in which people might make themselves look different online.

Copyright and ownership

- When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to reuse it.

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.

Summative assessment

Please see the assessment rubric document for this unit.

Subject knowledge

All lessons

- You will need to be familiar with the tools used throughout the unit in paint.net or your chosen image editor, and know how to save a new version of an image from within the editor. You can find a guide to all tools in paint.net at www.getpaint.net/doc/latest/index.html.
- You should consider how the learners will access the editor. For example, you may wish to create a shortcut to the program for them.

Lesson 1

- You will need to be familiar with the effect that cropping can have on an image. You can find more information at www.dpreview.com/forums/post/56318241.

Lesson 2

- You will need to know how to search for and save an image from pixabay.com.
- You will need to be familiar with how to combine parts of two images in your chosen image editor.

Lesson 3

- You will need to be familiar with how to make image adjustments and change effects in paint.net or your chosen image editor.

Lesson 4

- You will need to be familiar with the following tools in paint.net or your chosen image editor. For more information about tools in paint.net, visit the following websites:
 - The 'clone stamp': www.getpaint.net/doc/latest/CloneStamp.html
 - The 'recolor' tool: www.getpaint.net/doc/latest/RecolorTool.html
 - The 'magic wand' tool: www.getpaint.net/doc/latest/MagicWand.html

Lesson 5

- You will need to be familiar with the 'lasso select' tool in paint.net or your chosen image editor. For more information about this tool in paint.net, visit www.getpaint.net/doc/latest/LassoSelectionTool.html.

Lesson 6

- You will need to be familiar with the text and shape tools in paint.net or your chosen image editor. For more information about these tools in paint.net, visit www.getpaint.net/doc/latest/TextShapeTools.html.

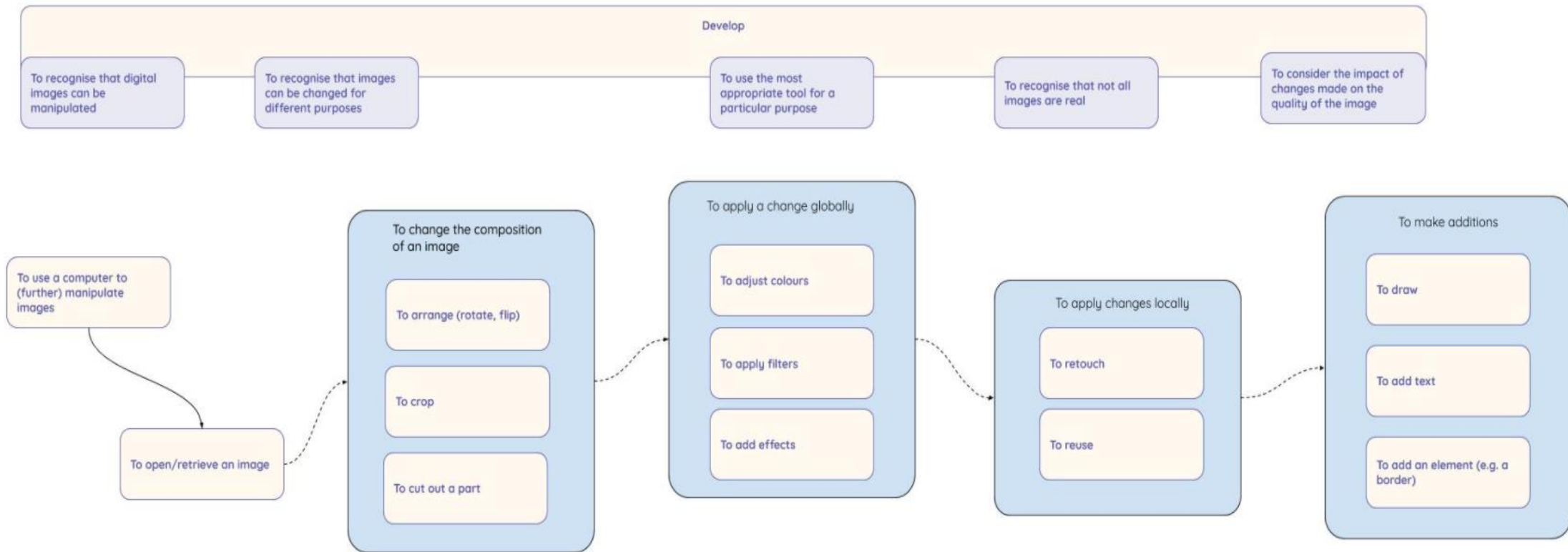
Enhance your subject knowledge to teach this unit through the following training opportunities:

Online training courses

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

Face-to-face courses

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



Publication assessment rubric

Learner:		Teacher:		Date:	
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Aspect of publication	Emerging [1]	Expected [2]	Exceeding [3]	Score
Edited image	Learners have made attempts to combine images using the 'selection' tool	Learners have selected images and combined them into one	Learners have purposefully combined images	
Text elements	Learners have added text to their publication	Learners have added relevant text to their publication	Learners have positioned and formatted their text well	
Other elements	Learners recognise that shapes/lines/borders can be added	Learners have integrated shapes/lines/borders into their design	Learners have integrated and carefully arranged shapes/lines/borders that fit with the theme	
Evaluation	Learners can describe what was successful and unsuccessful in their work	Learners have evaluated their publication according to criteria given	- Learners have used results from surveys to inform their evaluation - Evaluations refer to the impact that changes have made on an image	

Teacher feedback	
Learner response to feedback	

Spring 2 - MGL UNIT: Year 4 — Repetition in games

Unit introduction

This unit explores the concept of repetition in programming using the Scratch environment. It begins with a Scratch activity where learners can discover similarities between two environments. Learners look at the difference between count-controlled and infinite loops, and use their knowledge to modify existing animations and games using repetition. Their final project is to design and create a game which uses repetition, applying stages of programming design throughout.

There are two Year 4 programming units:

- Programming A — Repetition in shapes
- Programming B — Repetition in games

This is unit B, which should be delivered after unit A.

Throughout this unit, there are opportunities to model within Scratch or to demonstrate a concept through a video. Pedagogically, it is more beneficial to model the concepts to the learners, which allows for easier questioning and understanding. We recommend that you use the videos to see what needs to be modelled, but give a live demonstration within the lesson. However, the videos are provided on the slides if you wish to use them instead.

Overview of lessons

Lesson	Brief overview	Learning objectives
Using loops to create shapes	In the first lesson, learners look at real-life examples of repetition, and identify which parts of instructions are repeated. Learners then use Scratch, a block-based programming environment, to create shapes using count-controlled loops. They consider what the different values in each loop signify, then use existing code to modify	To develop the use of count-controlled loops in a different programming environment • I can list an everyday task as a set of instructions including repetition

	and create new code, and work on reading code and predicting what the output will be once the code is run.	• I can predict the outcome of a snippet of code • I can modify a snippet of code to create a given outcome
Different loops	In this lesson, learners look at different types of loops: infinite loops and count-controlled loops. They practise using these within Scratch and think about which might be more suitable for different purposes.	To explain that in programming there are infinite loops and count-controlled loops • I can modify loops to produce a given outcome • I can choose when to use a count-controlled and an infinite loop • I can recognise that some programming languages enable more than one process to be run at once
Animate your name	In this lesson, learners create designs for an animation of the letters in their names. The animation uses repetition to change the costume (appearance) of the sprite. The letter sprites will all animate together when the event block (green flag) is clicked. When they have designed their animations, the learners will program them in Scratch. After programming, learners then evaluate their work, considering how effectively they used repetition in their code.	To develop a design that includes two or more loops which run at the same time • I can choose which action will be repeated for each object • I can explain what the outcome of the repeated action should be • I can evaluate the effectiveness of the repeated sequences used in my program
Modifying a game	In this lesson, learners look at an existing game and match parts of the game with the design. They make changes to a sprite in the existing game to match the design. They then look at a completed design, and implement the remaining changes in the Scratch game. They add a sprite, re-use and modify code blocks within loops, and explain the changes made.	To modify an infinite loop in a given program • I can identify which parts of a loop can be changed • I can explain the effect of my changes • I can re-use existing code snippets on new sprites
Designing a game	In this lesson, learners look at a model project that uses repetition. They then design their own games based on the model project, producing designs and algorithms for sprites in the game. They share	To design a project that includes repetition • I can evaluate the use of repetition in a project

	these designs with a partner and have time to make any changes to their design as required.	• I can select key parts of a given project to use in my own design • I can develop my own design explaining what my project will do
Creating your games	In this lesson, learners build their games, using the designs they created in Lesson 5. They follow their algorithms, fix mistakes, and refine designs in their work as they build. They evaluate their work once it is completed, and showcase their games at the end.	To create a project that includes repetition • I can refine the algorithm in my design • I can build a program that follows my design • I can evaluate the steps I followed when building my project

Progression

This unit assumes that learners will have some prior experience of programming. The KS1 NCCE units cover floor robots and ScratchJr, and Scratch is introduced in the Year 3 programming units. However, experience of other languages or environments may also be useful.

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

Curriculum links

[National curriculum links](#)

- Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- Use logical reasoning to explain how some simple algorithms work, and to detect and correct errors in algorithms and programs

Assessment

Formative assessment

Assessment opportunities are detailed in each lesson plan. The learning objectives 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 objectives using thumbs up, thumbs sideways, or thumbs down.

Summative assessment

Please see the 'Assessment rubric' document for this unit.

We recommend the use of teacher accounts in Scratch to help with assessment throughout this unit. For guidance on setting up teacher accounts, please visit [the Scratch website](https://scratch.mit.edu/educators/faq). (<https://scratch.mit.edu/educators/faq>)

Subject knowledge

This unit focuses on developing learners' understanding of repetition within the Scratch programming environment. Repetition is where actions or commands in programming are repeated. The repeating commands can also be referred to as a 'loop'. Loops can be repeated indefinitely (known as 'infinite loops'), or for a set number of times (known as 'count-controlled loops').

This unit also develops learners' understanding of design in programming, using the approach outlined below.

When programming, there are four levels which can help describe a project (known as 'Levels of abstraction'). Research suggests that this structure can support learners 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 code-writing can aid learners in assessing the 'do-ability' of their programs. It also reduces a learner's cognitive load during programming.

Learners 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

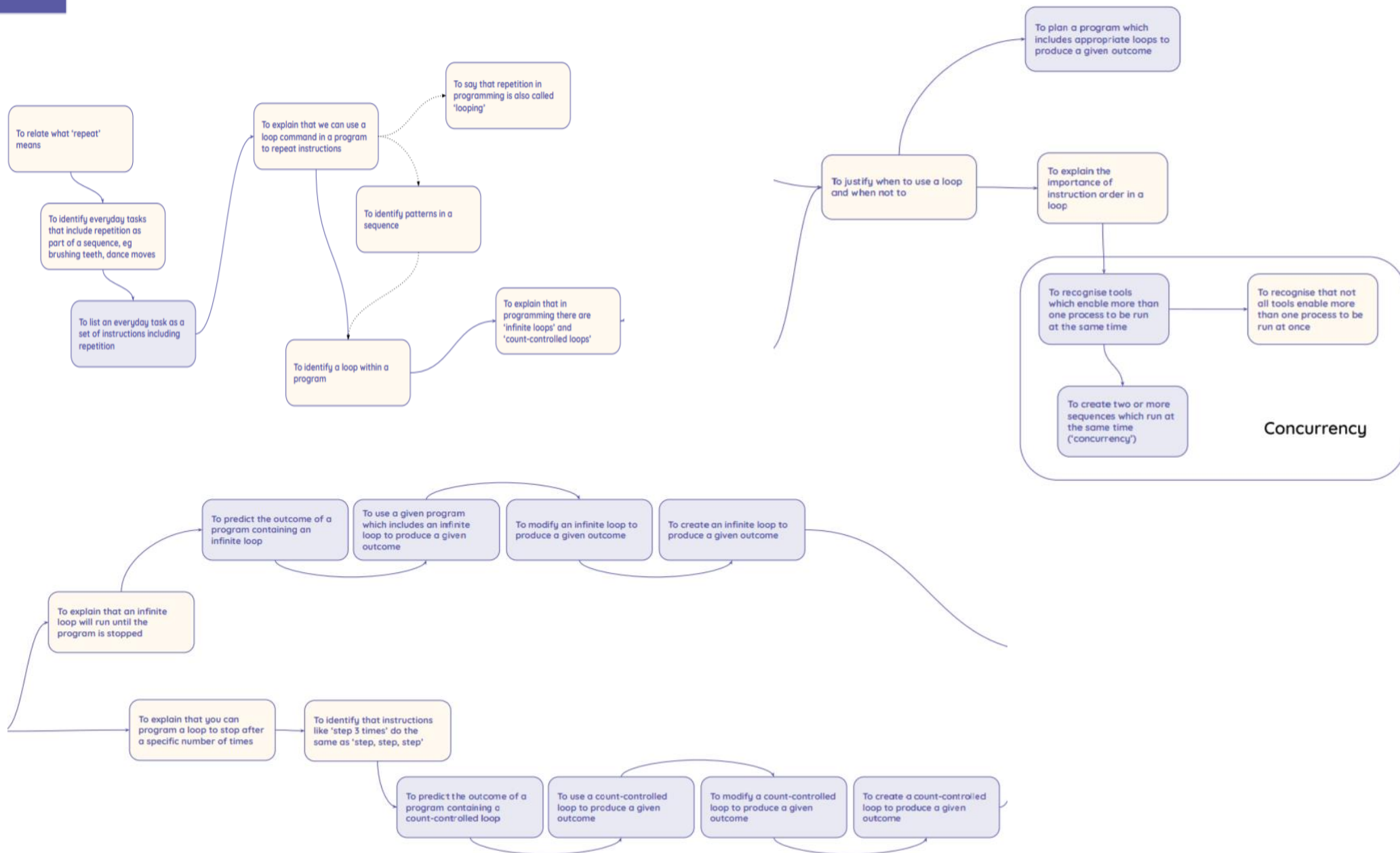
- [Raspberry Pi Foundation online training courses](#)

Face-to-face courses

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

Learning graph

Year 4 – Repetition in games



Repetition in games — Assessment rubric

Learner:		Teacher:		Date:	
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	Emerging [1]	Expected [2]	Exceeding [3]	Score
Task	Describe the genre of the project, eg 'game'	Describe the purpose of the project, eg 'to create a game where sprites disappear when they are clicked on and then reappear in a new place'		
Design	- Choose sprites and a backdrop - Create an algorithm for the sprites that uses repetition	- Choose relevant sprite and backdrops for a game - Algorithm created that includes show, hide, and move blocks - Algorithm created that includes relevant sound blocks	- Identify how additional sprites may need to be modified to enhance the game, eg use wait blocks to stagger the timing of sprites appearing - Identify aspects of the algorithm that can be reused for additional sprites	
Code	Translate their design into code for an individual sprite	- Create additional sprites and copy code over to those sprites - Modify their code for additional sprites	Include additional code which enhances the function of the game, reflecting design choices	
Running the code	- Runs successfully, meeting elements of the task - Identify which elements of the task	- Run their code and identify whether it meets the requirements of the task - Evaluate how successfully they met the task	- Run their code and explain how it meets the requirements of the task - Identify how their project could be improved	

	have been achieved			

Teacher feedback	
Learner response to feedback	

Summer 1: Year 4 – Data & Information - Data logging

Unit introduction

In this unit, pupils will consider how and why data is collected over time. Pupils will consider the senses that humans use to experience the environment and how computers can use special input devices called sensors to monitor the environment. Pupils will collect data as well as access data captured over long periods of time. They will look at data points, data sets, and logging intervals. Pupils will spend time using a computer to review and analyse data. Towards the end of the unit, pupils will pose questions and then use data loggers to automatically collect the data needed to answer those questions.

Note: Your school may not have the same data loggers as those used in this unit, or may not have any data loggers at all. If you don't have access to data loggers, a lot of the activities can be completed using tablet computers and apps such as Google Science Journal. Whichever data logging solution you have available, you should be able to address the learning objectives in the unit.

Overview of lessons

Lesson	Brief overview	Learning objectives
1 Answering questions	This lesson will set the scene for the unit of work. Pupils will consider what data can be collected and how it is collected. They will think about data being collected over time. Pupils will also think about questions that can and can't be answered using available data, and reflect on the importance of collecting the right data to answer questions. Later in the unit, pupils will put into practice the ideas that they have thought about in this lesson.	To explain that data gathered over time can be used to answer questions • I can choose a data set to answer a given question • I can suggest questions that can be answered using a given data set • I can identify data that can be gathered over time
2 Data collection	This lesson will build on the idea of collecting data over time, and introduce the idea of collecting data automatically using computers. Computers can capture data from the physical world using input devices called 'sensors'. Sensors can be	To use a digital device to collect data automatically

	connected to data loggers, which can collect data while not attached to a computer. Data collected by a data logger can be downloaded for use later.	• I can explain that sensors are input devices • I can use data from a sensor to answer a given question • I can identify that data from sensors can be recorded
3 Logging	In this lesson, pupils will explore how data loggers work. Pupils will try recording data at set moments in time and draw parallels with the data points that a data logger captures at regular intervals. Pupils will use data loggers independently from a computer, then they will connect the loggers to a computer and download the data.	To explain that a data logger collects 'data points' from sensors over time • I can identify a suitable place to collect data • I can identify the intervals used to collect data • I can talk about the data that I have captured
4 Analysing data	In this lesson, pupils will open an existing data file and use software to find out key information. The data file is a five-hour log of hot water cooling to room temperature. Note: The logged activity can't be done safely in school due to the high starting temperature. Later in the unit, pupils may choose to complete a warming experiment, starting with ice and allowing it to warm to room temperature.	To use data collected over a long duration to find information • I can import a data set • I can use a computer to view data in different ways • I can use a computer program to sort data
5 Data for answers	In this lesson, pupils will think about questions that can be answered using collected data. Pupils will choose a question to focus on and then plan the data logging process that they need to complete. After they have completed their plan, they will set up the data loggers to check that their plan will work. This setting up is designed to ensure that the data collection will work, and that pupils will have data to use in Lesson 6.	To identify the data needed to answer questions • I can propose a question that can be answered using logged data • I can plan how to collect data using a data logger • I can use a data logger to collect data

6 Answering my question	In this lesson, pupils will access and review the data that they have collected using a data logger. They will then use the data collected to answer the question that they selected in Lesson 5. Pupils will also reflect on the benefits of using a data logger.	To use collected data to answer questions • I can interpret data that has been collected using a data logger • I can draw conclusions from the data that I have collected • I can explain the benefits of using a data logger
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Progression

This unit progresses pupils' knowledge and understanding of data and how it can be collected over time to answer questions. The unit also introduces the idea of automatic data collection.

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

Curriculum links

[National curriculum links](#)

Computing – Key stage 2

- ...work with various forms of input
- 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

Science – Lower key stage 2/Year 4

- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- They should learn how to use new equipment, such as data loggers, appropriately. They should collect data from their own observations and measurements, using notes, simple tables and standard units, and help to make decisions about how to record and analyse this data.

Assessment

Formative assessment

Assessment opportunities are detailed in each lesson plan. The learning objectives 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.

Summative assessment

Please see the assessment rubric document for this unit.

Subject knowledge

This unit focuses on using technology to automatically gather environmental data over time. It refers to data points and logging intervals.

A data logger is a digital device that can collect data over time and store it. Data loggers designed for education will usually have built-in sensors for light, temperature, and sound, as well as the option to connect external sensors.

You should be aware that input devices allow data to be entered into a computer. Keyboards, mice, and microphones are all input devices.

A sensor is a type of input designed to allow computers to capture data from the physical environment. Sensors can be connected to a computer to capture data about temperature, light, sound, humidity, pressure, etc. A microphone can be used to record audio into a computer, or it can be used as a sound sensor.

You should also be aware that data loggers capture data at given time intervals. The interval is a regular time period between each data capture and can vary according to the experiment. For example, if data is being logged for a week, the interval might be every hour.

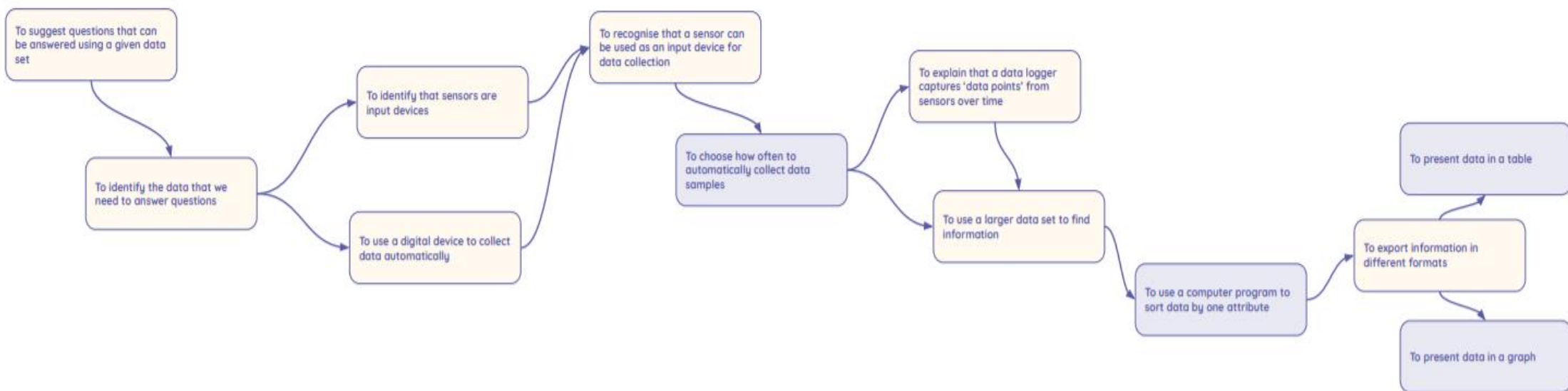
Enhance your subject knowledge to teach this unit through the following training opportunities:

Online training courses

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

Face-to-face courses

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



Assessment rubric: Year 4 – Data logging

Pupil:		Teacher:		Date:	
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	Emerging [1]	Expected [2]	Exceeding [3]	Score
Asking questions	- Suggests what topic they want to ask a question about - Chooses a relevant question that can be answered using a data logger	- Suggests questions that require data from at least one sensor to answer them - Suggests questions that require data to be collected over time to answer them	Suggests questions that require data from more than one sensor and/or time frame to answer them	
Collecting data	- Identifies what time of day they need to collect data - Chooses the most relevant place a data logger could be set up	- Identifies in which time frame to collect data to answer their question - Identifies where the data logger needs to be placed to answer their question - Identifies which sensor(s) needs to be used to answer their question	- Suggests the time frame that will offer the most varied data - Evaluates the most effective place to collect data	
Viewing data	- Uses software to view collected data - Recognises some data points in their data	- Uses software to view relevant data - Recognises how some data points are different	- Uses zoom features to look at sections of data more closely - Describes the differences in data points	
Findings	- Recognises changes in a graph - Identifies the part of the graph	Makes statements about what their data shows	Identifies the parts of their data most relevant to	

	that could help them answer their question	• Uses their collected data to answer their question	• answering their question • Suggests other questions that their data could answer	

Teacher feedback	
Pupil response to feedback	