

Year 6 – Communication and collaboration

Computing systems and networks

Prior learning retrieved

Year 5 computing and increasingly independent digital creation/programming

New knowledge / skill

explain the importance of internet addresses; recognise how data is transferred across the internet; explain how sharing information online can help people to work together; evaluate different ways of working together online; recognise how we communicate using technology; evaluate different methods of online communication

Why this? Why now?

In this unit learners explore how data is transferred over the internet. Learners initially focus on addressing, before they move on to the makeup and structure of data packets. Learners then look at how...

Careers link

IT technician; network engineer; systems engineer

SMSC link

Social/moral: collaborate respectfully, use technology responsibly and explain choices.
Spiritual/cultural: develop curiosity, creativity and confidence with digital tools.

Climate / sustainability

Use technology purposefully; where authentic, connect tasks to efficient systems, environmental data, sustainable choices or reducing unnecessary resource use.

Key resources / platform

Internet-enabled devices; shared documents; network/data-transfer models.

Key vocabulary

communication • collaboration • network • internet • data • packet • address • protocol • shared document • public • private

Year 6 – Communication and collaboration: Sessions 1–3

Session-by-session breakdown • learning objective • necessary resources

1

Internet addresses

To explain the importance of internet addresses

Internet-enabled devices; shared documents; network/data-transfer models.

2

Data packets

To recognise how data is transferred across the internet

Internet-enabled devices; shared documents; network/data-transfer models.

3

Working together

To explain how sharing information online can help people to work together

Internet-enabled devices; shared documents; network/data-transfer models.

Online safety is taught through PHSRE; computing lessons reinforce safe, respectful and responsible use in context.

Year 6 – Communication and collaboration: Sessions 4–6

Session-by-session breakdown • learning objective • necessary resources

4

Shared working

To evaluate different ways of working together online

Internet-enabled devices; shared documents; network/data-transfer models.

5

How we communicate

To recognise how we communicate using technology

Internet-enabled devices; shared documents; network/data-transfer models.

6

Communicating responsibly

To evaluate different methods of online communication

Internet-enabled devices; shared documents; network/data-transfer models.

Online safety is taught through PHSRE; computing lessons reinforce safe, respectful and responsible use in context.

Year 6 – Web page creation

Creating media

Prior learning retrieved

Year 5 computing and increasingly independent digital creation/programming

New knowledge / skill

review an existing website and consider its structure; plan the features of a web page; consider the ownership and use of images (copyright); recognise the need to preview pages; outline the need for a navigation path; recognise the implications of linking to content owned by other people

Why this? Why now?

Learners will be introduced to creating websites for a chosen purpose. Learners identify what makes a good web page and use this information to design and evaluate their own website using Google Sites....

Careers link

Digital designer; content creator; creative technologist

SMSC link

Social/moral: collaborate respectfully, use technology responsibly and explain choices.
Spiritual/cultural: develop curiosity, creativity and confidence with digital tools.

Climate / sustainability

Use technology purposefully; where authentic, connect tasks to efficient systems, environmental data, sustainable choices or reducing unnecessary resource use.

Key resources / platform

Google Sites or suitable web-authoring tool; prepared text/images; planning sheets.

Key vocabulary

website • web page • browser • hyperlink • navigation • layout • content • copyright • fair use • preview • publish

Year 6 — Web page creation: Sessions 1–3

Session-by-session breakdown • learning objective • necessary resources

1

What makes a good website?

To review an existing website and consider its structure

Google Sites or suitable web-authoring tool; prepared text/images; planning sheets.

2

Becoming a web designer

To plan the features of a web page

Google Sites or suitable web-authoring tool; prepared text/images; planning sheets.

3

Copyright or copyWRONG?

To consider the ownership and use of images (copyright)

Google Sites or suitable web-authoring tool; prepared text/images; planning sheets.

Online safety is taught through PHSRE; computing lessons reinforce safe, respectful and responsible use in context.

Year 6 — Web page creation: Sessions 4–6

Session-by-session breakdown • learning objective • necessary resources

4

How does it look?

To recognise the need to preview pages

Google Sites or suitable web-authoring tool;
prepared text/images; planning sheets.

5

Follow the breadcrumbs

To outline the need for a navigation path

Google Sites or suitable web-authoring tool;
prepared text/images; planning sheets.

6

Think before you link!

To recognise the implications of linking to
content owned by other people

Google Sites or suitable web-authoring tool;
prepared text/images; planning sheets.

Online safety is taught through PHSRE; computing lessons reinforce safe, respectful and responsible use in context.

Year 6 – Variables in games

Programming A

Prior learning retrieved

Year 5 computing and increasingly independent digital creation/programming

New knowledge / skill

define a 'variable' as something that is changeable; explain why a variable is used in a program; choose how to improve a game by using variables; design a project that builds on a given example; use my design to create a project; evaluate my project

Why this? Why now?

This unit explores the concept of variables in programming through games in Scratch. First, learners find out what variables are and relate them to real-world examples of values that can be set and changed....

Careers link

Software developer; programmer; robotics engineer

SMSC link

Social/moral: collaborate respectfully, use technology responsibly and explain choices. Spiritual/cultural: develop curiosity, creativity and confidence with digital tools.

Climate / sustainability

Use technology purposefully; where authentic, connect tasks to efficient systems, environmental data, sustainable choices or reducing unnecessary resource use.

Key resources / platform

Device with Scratch; starter projects; design/debug sheets.

Key vocabulary

variable • value • program • sprite • event • algorithm • input • output • change • score • timer • debug

Year 6 — Variables in games: Sessions 1–3

Session-by-session breakdown • learning objective • necessary resources

1

Introducing variables

To define a 'variable' as something that is changeable

Device with Scratch; starter projects; design/debug sheets.

2

Variables in programming

To explain why a variable is used in a program

Device with Scratch; starter projects; design/debug sheets.

3

Improving a game

To choose how to improve a game by using variables

Device with Scratch; starter projects; design/debug sheets.

Online safety is taught through PHSRE; computing lessons reinforce safe, respectful and responsible use in context.

Year 6 — Variables in games: Sessions 4–6

Session-by-session breakdown • learning objective • necessary resources

4

Becoming a games designer

To design a project that builds on a given example

Device with Scratch; starter projects; design/debug sheets.

5

Design to code

To use my design to create a project

Device with Scratch; starter projects; design/debug sheets.

6

Improving and sharing

To evaluate my project

Device with Scratch; starter projects; design/debug sheets.

Online safety is taught through PHSRE; computing lessons reinforce safe, respectful and responsible use in context.

Year 6 – 3D modelling

Creating media

Prior learning retrieved

Y5 vector/object manipulation and digital design

New knowledge / skill

3D space; move/resize/rotate; duplicate/group; holes/placeholders; accurate dimensions; plan/build/evaluate

Why this? Why now?

Extends object-based design into 3D and connects computing with real-world design/engineering.

Careers link

Architect; CAD designer; product designer; engineer

SMSC link

Spiritual/cultural: develop imagination, design appreciation and creative problem-solving. Social: critique designs respectfully and refine work in response to feedback.

Climate / sustainability

Design energy-efficient buildings, reusable products or structures with sustainable material/use discussions.

Key resources / platform

Tinkercad teacher/learner accounts; internet-enabled device; mouse recommended; planning sheets.

Key vocabulary

3D model • object • shape • dimension • workspace • view • resize • rotate • align • group • combine • duplicate • purpose

Year 6 — 3D modelling: Sessions 1–3

Session-by-session breakdown • learning objective • necessary resources

1

Introduction to 3D modelling

To recognise that you can work in three dimensions on a computer

Tinkercad teacher/learner accounts; internet-enabled device; mouse recommended; planning sheets.

2

Modifying 3D objects

To identify that digital 3D objects can be modified

Tinkercad teacher/learner accounts; internet-enabled device; mouse recommended; planning sheets.

3

Make your own name badge

To recognise that objects can be combined in a 3D model

Tinkercad teacher/learner accounts; internet-enabled device; mouse recommended; planning sheets.

Online safety is taught through PHSRE; computing lessons reinforce safe, respectful and responsible use in context.

Year 6 — 3D modelling: Sessions 4–6

Session-by-session breakdown • learning objective • necessary resources

4

Making a desk tidy

To create a 3D model for a given purpose

Tinkercad teacher/learner accounts;
internet-enabled device; mouse
recommended; planning sheets.

5

Planning a 3D model

To plan my own 3D model

Tinkercad teacher/learner accounts;
internet-enabled device; mouse
recommended; planning sheets.

6

Make your own 3D model

To create my own digital 3D model

Tinkercad teacher/learner accounts;
internet-enabled device; mouse
recommended; planning sheets.

Online safety is taught through PHSRE; computing lessons reinforce safe, respectful and responsible use in context.

Year 6 — Sensing movement

Programming B



Prior learning retrieved

Y6 variables plus Y3 sequence, Y4 repetition and Y5 selection

New knowledge / skill

micro:bit; inputs/outputs; selection; variables; conditional statements; design; step counter

Why this? Why now?

Culminating KS2 programming unit combines all four constructs in physical computing.

Careers link

Embedded systems engineer; wearable-tech developer; robotics engineer; health-tech designer

SMSC link

Moral/social: consider how automated systems affect people and environments. Spiritual: develop curiosity about physical computing. Cultural: explore real-world uses of sensing technology.

Climate / sustainability

Use sensing to explore activity, environment or smart systems; discuss how sensors support energy efficiency and environmental monitoring.

Key resources / platform

micro:bit; micro USB lead; battery pack; 2×AAA batteries; desktop computer; MakeCode website/emulator.

Key vocabulary

micro:bit • controllable device • input • output • sensor • variable • value • selection • condition • conditional statement • MakeCode • program

Year 6 — Sensing movement: Sessions 1–3

Session-by-session breakdown • learning objective • necessary resources

1

The micro:bit

To create a program to run on a controllable device

micro:bit; micro USB lead; battery pack; 2×AAA batteries; desktop computer; MakeCode website/emulator.

2

Go with the flow

To explain that selection can control the flow of a program

micro:bit; micro USB lead; battery pack; 2×AAA batteries; desktop computer; MakeCode website/emulator.

3

Sensing inputs

To update a variable with a user input

micro:bit; micro USB lead; battery pack; 2×AAA batteries; desktop computer; MakeCode website/emulator.

Online safety is taught through PHSRE; computing lessons reinforce safe, respectful and responsible use in context.

Year 6 — Sensing movement: Sessions 4–6

Session-by-session breakdown • learning objective • necessary resources

4

Finding your way

To use an conditional statement to compare a variable to a value

micro:bit; micro USB lead; battery pack; 2×AAA batteries; desktop computer; MakeCode website/emulator.

5

Designing a step counter

To design a project that uses inputs and outputs on a controllable device

micro:bit; micro USB lead; battery pack; 2×AAA batteries; desktop computer; MakeCode website/emulator.

6

Making a step counter

To develop a program to use inputs and outputs on a controllable device

micro:bit; micro USB lead; battery pack; 2×AAA batteries; desktop computer; MakeCode website/emulator.

Online safety is taught through PHSRE; computing lessons reinforce safe, respectful and responsible use in context.

Year 6 — Sensing movement: Assessment Endpoints

WORKING TOWARDS

With support, runs a simple micro:bit program, uses an input to change a variable and recognises a conditional statement.

EXPECTED

Designs and develops a micro:bit program that uses inputs, outputs, variables and selection, including comparing a variable with a value, to create a working step counter.

GREATER DEPTH

Independently combines sensing, variables and selection to solve a problem, predicts and explains program flow, tests systematically and refines the physical-computing solution.

Greater depth = greater independence, reasoning, purposeful choice, debugging/evaluation and transfer — not simply more content.

Year 6 — Introduction to spreadsheets

Data and information

Prior learning retrieved

Y4 data logging and Y5 flat-file databases

New knowledge / skill

rows/columns/cells; formats; cell references; formulas; ranges; duplicate formulas; charts; evaluate

Why this? Why now?

Applies accumulated data knowledge to calculations and decision-making before KS3.

Careers link

Data analyst; finance analyst; operations planner; climate-data analyst

SMSC link

Moral: use numerical data accurately and responsibly. Social: explain and justify decisions using evidence. Cultural: recognise how spreadsheets support organisations and everyday life.

Climate / sustainability

Model event costs, energy use, emissions or resource consumption; use charts to support sustainable decisions.

Key resources / platform

Laptop/desktop; Google Sheets or Microsoft Excel; prepared data/calculation handouts.

Key vocabulary

spreadsheet • cell • row • column • data set • format • formula • calculation • duplicate • autofill • chart • graph • presentation

Year 6 — Introduction to spreadsheets: Sessions 1–3

Session-by-session breakdown • learning objective • necessary resources

1

Collecting data

To create a data set in a spreadsheet

Laptop/desktop; Google Sheets or Microsoft Excel; prepared data/calculation handouts.

2

Formatting a spreadsheet

To build a data set in a spreadsheet

Laptop/desktop; Google Sheets or Microsoft Excel; prepared data/calculation handouts.

3

What's the formula?

To explain that formulas can be used to produce calculated data

Laptop/desktop; Google Sheets or Microsoft Excel; prepared data/calculation handouts.

Online safety is taught through PHSRE; computing lessons reinforce safe, respectful and responsible use in context.

Year 6 — Introduction to spreadsheets: Sessions 4–6

Session-by-session breakdown • learning objective • necessary resources

4

Calculate and duplicate

To apply formulas to data

Laptop/desktop; Google Sheets or Microsoft Excel; prepared data/calculation handouts.

5

Event planning

To create a spreadsheet to plan an event

Laptop/desktop; Google Sheets or Microsoft Excel; prepared data/calculation handouts.

6

Presenting data

To choose suitable ways to present data

Laptop/desktop; Google Sheets or Microsoft Excel; prepared data/calculation handouts.

Online safety is taught through PHSRE; computing lessons reinforce safe, respectful and responsible use in context.