

Think, Compute, Grow!

**A strategy for teaching computing
and ICT through sustainable
agriculture**

PART 5- LESSON PLANS – INTERMEDIATE STAGE



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USING THESE LESSON PLANS

Developmental goals

The lessons in this strategy all aim to further children's knowledge and understanding in the **nine development goals**. These goals aim to prepare children to use technology to succeed in their community and in the wider, digital world.

Foundational academic skills	Goal 1	Goal 2	Goal 3
	Foundational academic excellence	Functional and professional English	Geographic information and mapping
Understanding and using technology	Goal 4	Goal 5	Goal 6
	Introduction to software logic	Understanding computer systems and networks	Digital literacy, E-safety and AI
Applying technology to agriculture	Goal 7	Goal 8	Goal 9
	Agricultural financial literacy	Agricultural science	Modern marketing and business

Selecting lesson plans

The lessons plans in this strategy cover all nine developmental goals.

It is recommended that teachers **do not teach all of the lessons sequentially**, but instead select and use lessons to use as they see fit. Teachers may decide to spend two lessons teaching a lesson from this strategy. They may decide to repeat lessons within or in other years.

At the end of each group of lessons, an **objective coverage grid** highlights the skills that the lessons have covered by teaching each development goal.

THREE STAGES

Teaching is split into three stages of development These are:

Stage 1: Foundation stage (ages 7 – 9)

Description: Students become familiar with operating laptops. They enjoy being creative, solving problems and discovering familiar resources for research and learning.

Focus: Core computer problem solving, English language discovery, basic nature observation. Growing understanding of digital literacy.

Tools: Typing.com, E-Paath (grades 1 – 3), Scratch desktop (animation), Google Earth.

Stage 2: Intermediate stage (ages 10 – 12)

Description: Students grow in confidence at solving problems using technology. They make connections to their local environment and the technology they use. Children use digital tools to support their knowledge across subjects.

Focus: Structured document and presentation creation. Independent programming and problem solving using logical structures. Developing digital literacy.

Tools: Typing.com (focus on speed), E-Paath (grades 4 – 6), Scratch, Makecode, (virtual blocks), LibreOffice Writer.

Stage 3: Advanced stage (ages 13 – 16)

Description: Students apply their knowledge of hardware, software and online services to solve increasingly complex problems related to their environment.

Focus: Advanced programming logic (programming with Python), building automation hardware (Microbit), organising finances using spreadsheets, word-processing and presentational skills. Digital and AI literacy.

Tools: LibreOffice Calc (spreadsheets), Python programming (text-based programming), Microbits (programming using Microbit Python).

YEARLY PLANNING

This is an example of how a teacher might select and teach lessons from this strategy.

Week	Strategy lesson	Lesson focus
1	Introduction lesson	Introduction to the year. Agreeing ICT acceptable use. Lesson routines. Touch typing practice.
2	Lesson 2	Typing skills.
3	Lesson 3	Developing English vocabulary of everyday words
4	Lesson 4	Searching digital libraries
5	Lesson 1	Counting and grouping objects (academic skills)
6	Lesson 10	Programming a sprite to move left and right (continued)
7	Lesson 10	Programming a sprite to move left and right (continued)
8	Lesson 10	Programming a sprite to move left and right (continued)
9	Lesson 11	Programming the appearance of a sprite to change
10	Lesson 11	Programming the appearance of a sprite to change (continued)
11	Lesson 12	Programming the appearance of a sprite to change (continued)
12	Lesson 15	Programming a Microbit step counter (continued)
13	Lesson 15	Programming a Microbit step counter (continued)
14	Lesson 15	Programming a Microbit step counter (continued)
15	Lesson 19	E-safety
16	Lesson 20	E-safety
17	Lesson 30	English skills
18	Lesson 31	English skills
19	Lesson 25	Creating presentations
20	Lesson 26	Creating presentations
21	N/A	Preparation of a presentation about computing work this year
22	N/A	Delivering a presentation about computing work this year.

This example teacher has selected lessons from a variety of topics, giving children enough time to explore topics in depth while also covering a variety of content.

ONLINE RESOURCES

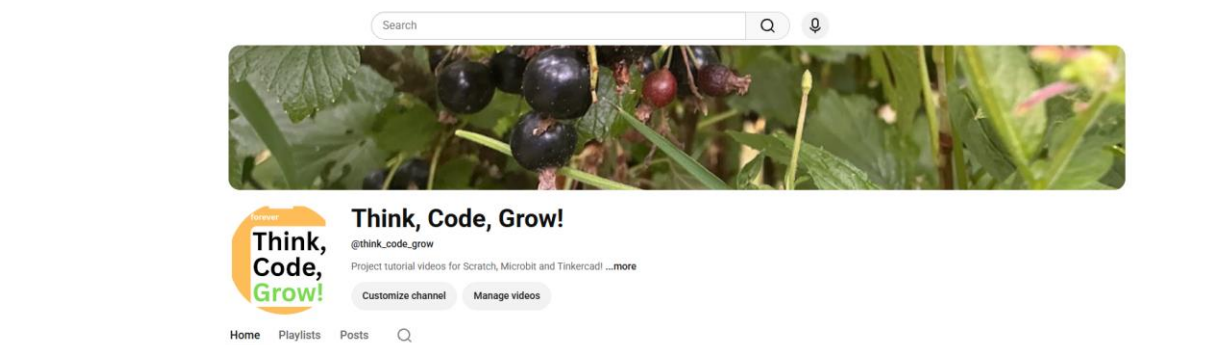
To support teachers and students in delivering and learning with his strategy, a bank of online resources is available.

YouTube videos

The YouTube channel, '[Think, Code, Grow!](#)' features video tutorials for projects created using **Scratch**, **MakeCode** (for Microbit) and **Python** (for Microbit and onscreen using Mu).

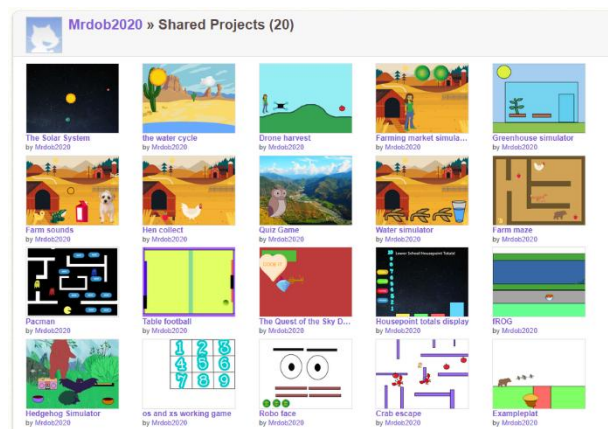
Teachers can use these video tutorials as part of their teaching to the class, playing and pausing videos to discuss them.

Teachers can also make the videos available to students, so that they can learn at their own pace. It is recommended that children watch a video the whole way through once, before using it to help them work on a project.



Scratch project examples

The **Scratch** channel, [MrDob2020](#), contains examples of all of the Scratch projects featured in this strategy. These examples are useful for teachers to show students before they embark on projects.



INTERMEDIATE-STAGE ASSESSMENT

Assessment Sheet – Intermediate Stage			
Student name: Date of assessment: <i>Best fit assessment – for each of the six sections, choose the closest descriptor</i>			
	Working towards expectations	Achieving expectations	Exceeding expectations
ICT Skills			
Understanding and controlling computers	Cans switch on a computer but sometimes needs help opening work. Can use bookmarks to open internet pages. Uses shift to capitalise letters.	Name the key components of a computer. Use keyboard shortcuts and the mouse to navigate Windows and the internet. Typing accurately using 2 hands.	Independently navigates Windows, creating folders to save and organise work. Controls parts of a computer confidently, including Wi-Fi connections
Creative and effective digital expression	Creates functional documents and presentations using text media. Uses proofreading tools. Uses 'undo' to fix mistakes.	Uses formatting tools to create clear and effective documents and presentations. Adds data to a spreadsheet and uses the =SUM() formula.	Uses principles of design to creates documents and presentations that are visually appealing and effective, incorporating images and graphs.
Digital literacy, AI literacy and E-safety			
Digital citizenship and online safety	Follows ICT rules in school and gives equivalent rules for home. Recognises situations where we should ask for adult help. Types kind comments online.	Gives examples of rules for using technology beyond school and ways to protect personal information. Explains types of cyberbullying and reporting procedures.	Demonstrates a healthy and mature attitude to using technology, being a role model for others. Makes good decisions about screentime and online behaviour.
Media literacy, AI literacy and ethics	Recognises AI search results. Recognises that talking to an AI is not the same as talking to a human. Knows age-limits for using AI tools.	Assesses the reliability of internet sources, including AI results. Explains machine learning in terms of algorithms. Identifies bias and issues around misinformation.	Talks with confidence about issues relating to bias and misinformation and ways to avoid these. Critiques the role of AI in society.
Programming and computational thinking			
Programming logic and computational thinking	Programs movement with growing precision, often using a 'trial and error' approach. Uses loops for repetition.	Identifies input and outputs. Uses conditions and variables with sensor devices. Debugs logically, based on behaviour.	Uses nested loops and conditions. Controls movement by a variable. Breaks sections of code down to debug.
Understanding computer systems and networks	Describes the key components of a network in the environment around them.	Describes the components of a computer network. Explains search engine result ranking.	Differentiates the internet from the world wide web. Suggests ways that networks can be configured effectively.

INTRODUCTORY LESSONS

Introduction lessons



INTRODUCTION TO COMPUTING THIS YEAR

Lesson 1 – Rules and routines	
Goal	Introduction to computing this year (rules and routines)
Learning objective	We are learning the routines and rules for computing lessons this year
UN Sustainable Development Goal	 SDG 4: Quality Education (Target 4.4: ...Substantially increase the number of youth who have relevant skills...) Learning to use computers safely and effectively
Success Criteria	• I can explain the routines for the start of the lesson • I can explain and agree to follow the ICT acceptable use rules • I can switch on and log into my computer • I can open Word and create a new document. • I can add and format text and add an image • I can name and save my work in the right place. • I can log off the computer at the end of the lesson
Introduction	1. Gather the children in the classroom and introduce yourself and the subject of computing. Give children an overview of some of the projects they will do this year. This could include showing them the YouTube channel or Scratch project page. 2. Explain what you would like children to do when they come into computer lessons (sit in assigned places, log on, open the touch-typing website, possible open last piece of work). 3. Read and discuss the ICT acceptable use agreement with children. Ask all children to sign a paper copy of this. Ensure this agreement is displayed clearly in the room. Explain that we have ICT rules to keep use and other people safe.

Main lesson	Step 1: Logging on (5 minutes) • Instruct the children to log onto their computers. Ask them to double click on the Chrome shortcut. Step 2: Opening and working on a document (30 minutes) • Show children an example of an ‘About me’ document created in either Microsoft Word or Libre Office Writer. This should include headings such as ‘My interests’, ‘My home’ and an image at the bottom of the page. Information should be arranged in a table. • Show students how to open Word and create a new document. • Show an example of a teacher-created document called ‘About Me’. This should include the headings above, formatted clearly and a table. • Remind, or show children how to access Pixabay.com or Wikipedia and search for, copy and paste an image of their choice to the base of their document. • Encourage discussion of appropriate searching, including using key words. • Children complete their own versions of the About Me document, with the teacher discussing this as they move around the room. • Ensure that students include a copied and pasted image from Pixabay about one of their interests of where they are from.
Plenary	Time: 10 minutes 1. Celebrate students’ success this lesson and recap rules and procedures. 2. If possible, the teacher can open some of the children’s work and offer feedback. 3. Students log off their computers and follow class exit procedure.

Lesson 2 – Setting up touch typing	
Goal	Introduction to Computing this year
Learning objective	We are learning to use the Shift key for capitalisation and to use keyboard shortcuts (Ctrl+ C, V, X, B, I and Z) to manipulate text.
UN Sustainable Development Goal	 SDG 4: Quality Education (Target 4.4: ...Substantially increase the number of youth who have relevant skills...) Learning to use computers safely and effectively
Success Criteria	• I can type sentences using correct Shift key capitalisation (in Typing.com) • I can use Ctrl+ C, V, X, B, I and Z to move text around in a document.
Introduction	Time: 15 minutes 1. Write a repeating pattern on the board: “Rice, Potato, Rice, Potato”. If had to write this a lot of times, how could we do this without getting tired? 2. Introduce and demonstrate system shortcuts: Ctrl+ C, V, X, B, I and Z. Model using these and how they can save time. 3. Display these shortcuts on a large poster on the wall and refer to this.
Main lesson	Time: 35 minutes Step 1: Typing practice (15 mins) • Children open Typing.com and work on the Intermediate section: Shift Key and Capitalisation • Students practise holding their little fingers down in the Shift keys and Typing with their other fingers. • Teacher role – ensure children are not using Caps Lock.

	Step 2: Opening Libre Office Writer (5 mins) • Students open a new document in Libre Office Writer. Step 3: Copying and Pasting challenge(15 mins) • Ask students to copy the sentence written on the board into their documents: “Local organic mountain ginger is high quality.” • Show children how to highlight the text and to use the keyboard shortcuts to manipulate the text. • Children practice manipulating the text and copying and pasting it ten times. • Students use Ctrl+S to save their work
Plenary	Time: 10 minutes 1. Ask the children, If we type a long farming record and the power cuts out, what should we have been pressing every 5 minutes (Ctrl+S) 2. Ask children to demonstrate the keyboard shortcuts with their fingers in the air 3. Ask children to save their work and safely shut down their laptops.

Lesson 3 – Parts of a computer	
Goal	Introduction to Computing this year
Learning objective	We are learning to name the parts of a computer and describe the function of each part.
UN Sustainable Development Goal	 SDG 2: Industry, Innovation and Infrastructure (Target 9.c: Increase access to information and communications technology) Developing understanding of how computers and networks operate
Success Criteria	• I can categorise external components as input or output devices • I can connect external peripherals to a computer or set up a laptop (power, on button) • I can turn a laptop or computer on and troubleshoot basic problems • I can name the internal components of a computer (CPU, RAM, storage, motherboard) • I can explain the function of internal parts of a computer • I can explain the difference between short term and long-term memory.
Introduction	Time: 15 minutes 1. Display a range of peripherals (mouse, monitor, keyboard, speakers, microphone, Microbit, printer etc.) 2. Ask students how they could be sorted. Elicit that we could sort them into two categories: inputs and outputs. 3. Discuss the difference: Input = information into a computer, Outputs = something the computer does, usually that we can see or hear. Ask for other examples.

	4. Ask the question of what goes in the middle of the three-step diagram: Input → ? → Output (processing)
Main lesson	Time: 35 minutes Step 1: Exploring internal components (20 mins) • The teachers should (if possible) have a computer that the children can see inside. If this is not possible, a video or image will suffice. • Provide the labels: CPU, RAM memory, hard disk, motherboard. Ask the children to predict which parts are which. • Explain the parts of a computer as: • CPU – the “brain of the computer”. Follows instructions we give it through programs. • RAM (random access memory) – short term memory that clears when we turn the computer off! • Storage: Long term memory that stores our data • Motherboard – a “road” that connects all the components together. • Show the children the connectors that peripherals connect to and how these also connect to the motherboard Step 3: Peripheral set up and practice (15 mins) • Ask students to turn on their laptops by opening them and pressing the power button. • Instruct them to connect external peripherals, such as speakers, Microbit (via USB), microphone. • Show them how to shut the computer down safely so that the hard disk does not get damaged. • Show students how to configure the sound in Windows, how to change brightness, how to use ‘ctrl’+‘alt’+‘delete’ to shut down

Plenary	Time: 10 minutes 1. Ask the children to work in pairs and come up with three ways that we can safely look after a computer 2. Perform a quick quiz on the names and functions of parts of a computer 3. Ask the children to safely shut their computers down.
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Teaching objectives covered in this unit

(Highlighted skills are taught in one of the lessons for this development goal)

Intermediate level (age 10 – 12) – teaching objectives	
ICT Skills	Skills taught in lesson(s):
1. Name the core parts of a computer. Manually connect and configure external devices (i.e. Speakers, mouse, Microbit).	1, 3
2. Navigate Windows file systems; create, rename and organise files and folders.	1
3. Use a full range of keyboard shortcuts (Ctrl+v, x, c, z, y, b, l, a).	2
4. Type accurately at a speed of 20 words per minute using two hands and correct home row positioning.	2
5. Navigate an internet browser, using back/refresh buttons, managing bookmarks, windows and multiple tabs.	2, 4, 5, 7, 9
6. Create advanced text documents using formatting tools, text boxes, images, tables and using proofreading tools.	6, 8, 10, 34
7. Create a dynamic presentation using unified styles, lists, diagrams, slide transitions and animations.	33
8. Create digital designs with precision using object grouping, custom layer fills and alignment tools.	33
9. Add data to a spreadsheet and use basic formulas (=SUM)	29
10. Generate graphs and tables to view and interpret data	30, 31
Digital literacy, AI literacy and E-safety	Skills taught in lesson(s):
1. Explain some ICT rules beyond school, i.e. copyright, age limits.	1, 26
2. Explain the concept of a 'digital footprint' and its effects.	24
3. Explain the effects of sharing personal information online.	24
4. Give clear examples of cyberbullying and articulate its emotional and legal consequences.	25
5. Describe how technology can be used in a healthy lifestyle.	25
6. Explain a procedure for reporting inappropriate content, contact and grooming online.	27
7. Critically assess the reliability, origin and trustworthiness of internet search results rather than clicking the first link.	28, 29
8. Identify advanced generative AI tools and their effects in society. Explain how AI and machine learning works using algorithms.	28, 29
9. Identify issues relating to misuse of AI including bias, deepfake misinformation, and issued with how AI-generated text can confuse younger users	28,29
,	

Programming and computational thinking	Skills taught in lesson:
1. Explain the difference between ‘input’ and ‘output’; give algorithms for both and program inputs and outputs in physical devices and in on-screen environments.	14, 19, 20
2. Program precise movement using positive and negative values.	16, 18, 18
3. Use ‘wait’ commands in programs to improve results.	15,19
4. Use different types of loops, i.e. nested lops, repeat until loops.	14, 21
5. Use an ‘if, elif, else’ conditional structure; use nested conditions.	15, 19, 20
6. Create more than one variable for a program, program movement by a variable amount.	14, 15, 16
7. Independently decompose problems, look for repetition and debug.	15, 17, 18
8. Debug logically, based on behaviour. Identify sections of code that work.	14, 17, 18
9. Explain the components that make up a computer network and explain how data is transmitted across networks including the internet. Differentiate the internet from the world wide web.	22
10. Explain how search engines work and rank web pages (keywords, algorithms, paid ads), select reliable results.	23

GOAL 1 - FOUNDATIONAL ACADEMIC EXCELLENCE (VIA E-PAATH)

Goal 1



FOUNDATIONAL ACADEMIC EXCELLENCE

Lesson 4 – Maths skills	
Goal	Goal 1 – Foundational academic excellence (via E-Paath)
Learning objective	We are learning to identify, calculate and apply fraction values (halves, quarters and eights) to divide agricultural yields and land parcels.
UN Sustainable Development Goal	 SDG 4: Quality Education (Target 4.4: ...Substantially increase the number of youth who have relevant skills...) Learning to use computers to develop academic skills
Success Criteria	• I can navigate to the Class 4/5 Mathematics section in E-Paath • I can solve visual fraction matching puzzles to divide crops into equal parts • I can calculate the exact fraction of a crop batch to keep for seeds versus the fraction to sell
Introduction	Time: 15 minutes 1. Present a real dilemma. “If our harvest basket has 12 pumpkins and we must save $\frac{1}{3}$ of them for next year’s seeds and sell the rest at market, how do we divide them?” 2. Draw a circle on the board representing a plot of land. Divide it into four parts. What do we call these parts? ($\frac{1}{4}$) 3. Connect the learning with the digital tool. Explain that today we will use E-Paath to develop our maths skill using fractions which help us to split land and seeds fairly.

Main lesson	Time: 35 minutes Step 1: Accessing E-Paath (5 mins) • Instruct the students to open E-Paath, select class 4 or class 5, choose Mathematics and launch the Fractions module. Step 2: Independent practice (20 mins) • Students use E-Paath to practise the interactive visual fractions challenges. • Students slide objects, group items, and match written equations in the context of produce. • Teacher role – walk around the classroom ensuring that students are thinking before they click buttons. Step 3: Practical application (10 mins) 1. Present children with some fraction problems, either on worksheets or projected onto the screen 2. Children use Libre Office Writer to type out their answers to the calculations.
Plenary	Time: 10 minutes 1. Ask the class why using fractions is safer to farm than guessing how much to sell. (It ensures we keep enough seeds to plant next year) 2. Celebrate the accuracy and success this lesson 3. Exit instructions: close down the internet, save work and log off computers.

Teaching objectives covered in this unit

(Highlighted skills are taught in one of the lessons for this development goal)

Intermediate level (age 10 – 12) – teacher assessment of children	
ICT Skills	Skills taught in lesson(s):
1. Name the core parts of a computer. Manually connect and configure external devices (i.e. Speakers, mouse, Microbit).	1, 3
2. Navigate Windows file systems; create, rename and organise files and folders.	1
3. Use a full range of keyboard shortcuts (Ctrl+v, x, c, z, y, b, l, a).	2
4. Type accurately at a speed of 20 words per minute using two hands and correct home row positioning.	2
5. Navigate an internet browser, using back/refresh buttons, managing bookmarks, windows and multiple tabs.	2, 4, 5, 7, 9
6. Create advanced text documents using formatting tools, text boxes, images, tables and using proofreading tools.	6, 8, 10, 34
7. Create a dynamic presentation using unified styles, lists, diagrams, slide transitions and animations.	33
8. Create digital designs with precision using object grouping, custom layer fills and alignment tools.	33
9. Add data to a spreadsheet and use basic formulas (=SUM)	29
10. Generate graphs and tables to view and interpret data	30, 31
Digital literacy, AI literacy and E-safety	Skills taught in lesson(s):
1. Explain some ICT rules beyond school, i.e. copyright, age limits.	1, 26
2. Explain the concept of a 'digital footprint' and its effects.	24
3. Explain the effects of sharing personal information online.	24
4. Give clear examples of cyberbullying and articulate its emotional and legal consequences.	25
5. Describe how technology can be used in a healthy lifestyle.	25
6. Explain a procedure for reporting inappropriate content, contact and grooming online.	27
7. Critically assess the reliability, origin and trustworthiness of internet search results rather than clicking the first link.	28, 29
8. Identify advanced generative AI tools and their effects in society. Explain how AI and machine learning works using algorithms.	28, 29
9. Identify issues relating to misuse of AI including bias, deepfake misinformation, and issued with how AI-generated text can confuse younger users	28,29

Programming and computational thinking	Skills taught in lesson:
1. Explain the difference between ‘input’ and ‘output’; give algorithms for both and program inputs and outputs in physical devices and in on-screen environments.	14, 19, 20
2. Program precise movement using positive and negative values.	16, 18, 18
3. Use ‘wait’ commands in programs to improve results.	15,19
4. Use different types of loops, i.e. nested lops, repeat until loops.	14, 21
5. Use an ‘if, elif, else’ conditional structure; use nested conditions.	15, 19, 20
6. Create more than one variable for a program, program movement by a variable amount.	14, 15, 16
7. Independently decompose problems, look for repetition and debug.	15, 17, 18
8. Debug logically, based on behaviour. Identify sections of code that work.	14, 17, 18
9. Explain the components that make up a computer network and explain how data is transmitted across networks including the internet. Differentiate the internet from the world wide web.	22
10. Explain how search engines work and rank web pages (keywords, algorithms, paid ads), select reliable results.	23

GOAL 2 – FUNCTIONAL AND PROFESSIONAL ENGLISH

Goal 2



FUNCTIONAL AND PROFESSIONAL ENGLISH

Lesson 5 – Interactive listening with British Council	
Goal	Goal 3 – Functional and professional English
Learning objective	We are learning to navigate a website independently to practise English listening and vocabulary using games
UN Sustainable Development Goal	 SDG 4: Quality Education (Target 4.6: ...A substantial proportion of adults...achieve literacy and numeracy) Learning to use computers to develop English literacy
Success Criteria	• I can navigate to the Learn English Kids section of the British Council website: https://learnenglishkids.britishcouncil.org/ • I can complete a ‘listen and watch’ story or song module • I can list 5 new English vocabulary words learned from the activity
Introduction	1. Ask the children what their favourite stories and songs are. Do they know any stories from other countries? 2. What kinds of vocabulary do we normally find in stories? Record some words on the board such as ‘character’, ‘hero’, ‘quest’ etc. 3. Explain that in this lesson, we will be improving our English using stories, songs and games on the British Council website.
Main lesson	Time: 35 minutes Step 1: Opening and navigating the website (10 minutes) • Show children how to access the British Council learning English Kids website, either through a Google search or through a link on the desktop.

	• Show the children how to access the section Learning English kids > Grammar and vocabulary > word games • Demonstrate how the activities and games work and play some as a class. Step 2: Interactive activity (15 minutes) • Students select an activity module (e.g. Jobs, Environment or Food). They listen to audio pronunciations and complete the matching word games. Step 3: Vocabulary Log (10 minutes) • Students open a new Word document or Libre Office Writer document. They add a table with headings and add their 5 new vocabulary words to this table.
Plenary	Time: 10 minutes 1. Ask the children which words they discovered in this lesson. 2. Emphasise that the vocabulary log we started in this lesson will continue for the next few weeks. 3. Ensure that children name and save their work in the correct folder and shut down their computers.

Lesson 6 – Guided research with E-Paath	
Goal	Goal 3 – Functional and professional English
Learning objective	We are learning to identify English descriptive words using an interactive E-Paath module
UN Sustainable Development Goal	 SDG 4: Quality Education (Target 4.6: ...A substantial proportion of adults...achieve literacy and numeracy) Learning to use computers to develop English literacy
Success Criteria	• I can navigate to the E-Paath website https://epaath.olenepal.org/ • I can select my grade level and subject (English/Science) in E-Paath • I can complete a module lesson and its interactive exercise game • I can record 4 descriptive sentences about a tool or product from the module
Introduction	1. Ask the children which words they know or use in relation to science 2. Explain that in this lesson, we will be using interactive activities to learn new scientific words. 3. Remind the children of the logs we started last lesson to record our new English words.
Main lesson	Time: 35 minutes Step 1: Selecting modules (10 minutes) • Direct students to open the E-Paath website, either through a Google search or through a shortcut on their desktops. • Direct students to select English or Science, grades 4 or 5 and pick a topic related to nature or agriculture. Step 2: Interactive practice (20 minutes)

	• Students work through the module's text and audio and complete the end of lesson quiz. Step 3: Vocabulary Log (10 minutes) • Students write down key describing words from the module in the vocabulary log that they started last week. • Emphasise to students that they will be using this log in lesson 5 of this unit.
Plenary	Time: 10 minutes • Ask the children to share examples of useful words that they have learned from singing E-Paath this lesson. • Ensure that children save their work in Word. • Ask children to log off their computers and shut them down.

Lesson 7 – Translation with Google Translate	
Goal	Goal 3 – Functional and professional English
Learning objective	We are learning to use Google Translate to translate single words and phrases between Nepali and English
UN Sustainable Development Goal	 SDG 4: Quality Education (Target 4.6: ...A substantial proportion of adults...achieve literacy and numeracy) Learning to use computers to develop English literacy
Success Criteria	• I can set the target language in Google Translate • I can use the audio playback feature to listen for correct English pronunciation • I can identify errors when translating word-for-word
Introduction	1. Ask the children where they can go if they need to find out a specific work in another language. 2. Ask children if they have heard of online translation tools like Google Translate and why this might be useful
Main lesson	Time: 35 minutes Step 1: Input and pronunciation (10 minutes) • Teach children how to input a phrase in Nepali and set the output to English. • Demonstrate the speaker icon for listening to English pronunciation. Step 2: Translation activity (15 minutes) • Students translate short phrases related to everyday objects or local farm products. • Critical analysis – Students observe how translating complex sentences word for word sometime produces awkward grammar.

	Step 3: Vocabulary Log (10 minutes) • Ask students to open their vocabulary logs and copy and paste language that they have learned in this lesson.
Plenary	Time: 10 minutes • Ask the children which words or phrases they have learned in this lesson. • Ask the students what the limitations of using Google Translate are. • Ensure that students save their vocabulary logs and log off their computers.

Lesson 8 – Word processing	
Goal	Goal 3 – Functional and professional English
Learning objective	We are learning to use formatting tools in Word/Write to create a professional looking document
UN Sustainable Development Goal	 SDG 4: Quality Education (Target 4.4: ...Substantially increase the number of youth who have relevant skills...) Formatting digital work clearly and effectively
Success Criteria	• I can adjust text alignment (left/centre/right) • I can set font size and styles • I can create bullet and numbered lists • I can insert and position an image alongside text
Introduction	1. Ask the students when they might have to write something using a computer. 2. How would we want it to look? How would we achieve this? 3. Show the students two documents, one that has been formatted well and one that has not. Ask them to point out the differences. 4. Explain that in this lesson, students are going to write an article entitles “My favourite local product”. Explain that this is the kind of article that could go on a website or in a publication.
Main lesson	Time: 35 minutes Step 1: Layout demonstration (5 minutes) • Demonstrate title formatting (bold, 18pt, centre), body text (12pt, justified) and bulleted lists. • Model writing an article about a local product, adding features of the product as a bullet pointed list

	Step 2: Layout practice (20minutes) • Guide children through typing their own articles. Ensure that children use the formatting tools that were modelled and displayed in the success criteria. • Encourage children to try to type with two hands, as they have practised. Step 3: Adding an image (10 minutes) • Model navigating to Pixabay.com and searching for an image relating to the article. • Model copying the image (or saving it) and inserting it into the document. • Model resizing the image • Model formatting the image so that the text wraps around it. • Children add their own images into their document.
Plenary	Time: 10 minutes • Ask the children to display their articles on their screens so that they can read and offer feedback on each other's work. • Remind the children of the formatting skills they have learned today. • Ensure that children save their work and log off their computers.

Lesson 9 – Drafting content	
Goal	Goal 3 – Functional and professional English
Learning objective	We are learning to combine digital research, translation and word processing to gather content for a product sheet.
UN Sustainable Development Goal	 SDG 4: Quality Education (Target 4.4: ...Substantially increase the number of youth who have relevant skills...) Combining digital tools to present ideas
Success Criteria	• I can draft text in my own language and translate it using Google Translate • I can copy and paste translated text into a Word document • I can organise text using clear headings • I can format text tidily
Introduction	1. Show the children an example of the finished piece of work that we are aiming for: a product description for produce that grows locally. 2. Ask the children where this kind of product description might be used? (in advertisements, online) 3. Explain to the children that this piece of work will take two lessons and that they should use all the language and skills that they have been developing for the last two weeks
Main lesson	Time: 35 minutes Step 1: Drafting (15 minutes) • Students write three core sections for a local selected product (e.g. local tea, woven basket or farming tool) in their primary language. • They translate this using Google Translate.

	Step 2: Pasting text (5 minutes) • Guide children to use Ctrl+Shift+V (keep text only) shortcut so that pasted text matches the Word document font style automatically. Step 3: Editing and proofing (15 minutes) • Students review the English text, correct translation errors using vocabulary learned in lessons 1 and 2 and apply heading styles.
Plenary	Time: 10 minutes 1. Ask the children to display their work on their screens so that other students can read and offer feedback. 2. Ensure that students save their work as they will continue in the next lesson.

Lesson 10 – Generating a product sheet	
Goal	Goal 3 – Functional and professional English
Learning objective	We are learning to translate, read and write descriptive agricultural trade offers combining crop names, quality descriptors and numeric quantities.
UN Sustainable Development Goal	 SDG 2: Zero Hunger (Target 2.c: Adopt measures to ensure the proper functioning of food commodity markets) Advertising crops effectively using publishing tools
Success Criteria	• I can translate complete descriptive sentences (i.e. We have 50 bags of fresh potatoes” using Google Translate. • I can type these descriptions into a professional, clean template in Libre Office Writer • I can correctly read aloud an English Cargo description to a partner. •
Introduction	Time: 15 minutes 1. Ask, “If a wholesale buyer from Kathmandu wants to buy our village’s ginger, but they only speak English and read typed messages, how do we write to them?” 2. Explain that to sell large crops, we must specify three critical details: How much we have, the quality and the price. 3. Show an example on the board. Quantity + Quality descriptor + Crop name
Main lesson	Time: 35 minutes Step 1: Translating descriptions (10 mins)

	• Instruct students to open Google Translate in their browsers. Set up the input as Nepali and the output as English. • Have students translate local farm items and quantities. Step 2: Typing product sheets using Libre Office Writer (20 mins) • Guide students to open Libre Office Writer. • Teach children to follow a clean business offer letter format. They should fill in their own crop names and quantities: Seller name: Seller name Location: Village name Product offer: e.g. 100 kilograms of sweet apples Product offer 2: e.g. 40 bags of dry, organic ginger Show children how to make sections bold, using Ctrl+B to make the sheet look professional. Step 3: Reading and checking (5 mins) • Ask students to switch seats with another class member. • Students read out loud their partner's product sheet and check if the language is clear.
Plenary	Time: 15 minutes 4. Call on a student to read aloud their product sheet to the class, as if they were pitching to a buyer. 5. Celebrate success and summarise learning Save work and shutdown computers.

Teaching objectives covered in this unit

(Highlighted skills are taught in one of the lessons for this development goal)

Intermediate level (age 10 – 12) – teacher assessment of children	
ICT Skills	Skills taught in lesson(s):
1. Name the core parts of a computer. Manually connect and configure external devices (i.e. Speakers, mouse, Microbit).	1, 3
2. Navigate Windows file systems; create, rename and organise files and folders.	1
3. Use a full range of keyboard shortcuts (Ctrl+v, x, c, z, y, b, l, a).	2
4. Type accurately at a speed of 20 words per minute using two hands and correct home row positioning.	2
5. Navigate an internet browser, using back/refresh buttons, managing bookmarks, windows and multiple tabs.	2, 4, 5, 7, 9
6. Create advanced text documents using formatting tools, text boxes, images, tables and using proofreading tools.	6, 8, 10, 34
7. Create a dynamic presentation using unified styles, lists, diagrams, slide transitions and animations.	33
8. Create digital designs with precision using object grouping, custom layer fills and alignment tools.	33
9. Add data to a spreadsheet and use basic formulas (=SUM)	29
10. Generate graphs and tables to view and interpret data	30, 31
Digital literacy, AI literacy and E-safety	Skills taught in lesson(s):
1. Explain some ICT rules beyond school, i.e. copyright, age limits.	1, 26
2. Explain the concept of a 'digital footprint' and its effects.	24
3. Explain the effects of sharing personal information online.	24
4. Give clear examples of cyberbullying and articulate its emotional and legal consequences.	25
5. Describe how technology can be used in a healthy lifestyle.	25
6. Explain a procedure for reporting inappropriate content, contact and grooming online.	27
7. Critically assess the reliability, origin and trustworthiness of internet search results rather than clicking the first link.	28, 29
8. Identify advanced generative AI tools and their effects in society. Explain how AI and machine learning works using algorithms.	28, 29
9. Identify issues relating to misuse of AI including bias, deepfake misinformation, and issued with how AI-generated text can confuse younger users	28,29

Programming and computational thinking	Skills taught in lesson:
1. Explain the difference between ‘input’ and ‘output’; give algorithms for both and program inputs and outputs in physical devices and in on-screen environments.	14, 19, 20
2. Program precise movement using positive and negative values.	16, 18, 18
3. Use ‘wait’ commands in programs to improve results.	15,19
4. Use different types of loops, i.e. nested lops, repeat until loops.	14, 21
5. Use an ‘if, elif, else’ conditional structure; use nested conditions.	15, 19, 20
6. Create more than one variable for a program, program movement by a variable amount.	14, 15, 16
7. Independently decompose problems, look for repetition and debug.	15, 17, 18
8. Debug logically, based on behaviour. Identify sections of code that work.	14, 17, 18
9. Explain the components that make up a computer network and explain how data is transmitted across networks including the internet. Differentiate the internet from the world wide web.	22
10. Explain how search engines work and rank web pages (keywords, algorithms, paid ads), select reliable results.	23

GOAL 3 – GEOGRAPHIC INFORMATION AND MAPPING

Goal 3



GEOGRAPHIC INFORMATION AND MAPPING

Lesson 11 – Google Earth controls	
Goal	Goal 8 – Geographic information and mapping
Learning objective	We are learning master essential map control in Google Earth (pan, tilt, search, rotate) and differentiate between satellite, 3D terrain and street view
UN Sustainable Development Goal	 SDG 11: Sustainable Cities and Communities (Target 11.a: Support positive economic, social and environmental links) Using digital mapping tools to navigate the local area
Success Criteria	• I can input GPS coordinates to find specific global locations • I can tilt the camera into 3D view and rotate it around a landmark • I can drop the Pegman to enter 360 Street View and navigate back to orbit
Introduction	1. Ask the children how we can find out about our local area and other areas around the world. 2. Discuss the difference between a paper atlas and online software. 3. Explain that Google Earth is made using satellite photos of the whole world.
Main lesson	Time: 35 minutes Step 1: Exploring Google Earth (10 mins) • Demonstrate how to navigate to Google Earth earth.google.com. • Demonstrate the core controls: • Searching (magnifying glass)

	• Navigation controls (bottom right): Compass wheel, click N to orientate north, 2D/3D toggle, zoom and Pegman. • Allow students to experiment with these tools Step 2: Navigation challenge (20 mins) • Guide children through three navigation exercises: Activity 1: • Type 27.9881, 86.9250 (Mount Everest) in the search bar. Use Shift+drag (or the 3D button) to tilt the camera and view mountain topography in 3D. Activity 2: • Search for the Eiffel Tower. Rotate around the tower 360 degrees while maintaining focus on the structure. Activity 3: • Drag the Pegman onto the streets around the tower to enter Streetview. Click the exit arrow to pop back out into orbit. Step 3: Local navigation (10 mins) • Ask students to navigate to their school or local area. Drop the Pegman into Streetview and discuss what they can see.
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Plenary	Time: 10 minutes 1. Ask the class, “How is Google Earth a useful tool for us?” 2. Celebrate children’s success at using Google Earth tools. 3. Children close Google Earth and safely shut down laptops
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Lesson 12 – Measuring in Google Earth	
Goal	Goal 8 – Geographic information and mapping
Learning objective	We are learning to use the Google Earth measurement tool to calculate distances and the timelapse tool to show change over time.
UN Sustainable Development Goal	 SDG 13: Climate Action (Target 13.3: Improve education, awareness...on climate change mitigation) Mapping changes to the world including deforestation and urban expansion
Success Criteria	• I can measure linear distances in metres and kilometres using the Ruler Tool. • I can draw a closed polygon to measure the surface area of a plot of land • I can use Timelapse/Historical Imagery to identify human or environmental changes over time
Introduction	• Ask the children what we might want to measure using a tool like Google Earth. • How might measurement be useful for farming work, or building work?
Main lesson	Time: 35 minutes Step 1: Linear and area measurement (15 mins) • Show children how to click on the Ruler tool on the left menu bar. • Path measurement: Show children how to click on a starting point on a road or a river and an end point to measure the distance. Switch units between metres and kilometres.

	• Polygon area measurement: Show children how to fly to a field or sports field. Click on corners around the perimeter and close the shape at the starting node. View the area in metres squared. Step 2: Time travel with Timelapse (20 mins) • Guide the children to open the Timelapse tool (or Historical Imagery). • Search for areas to witness a significant transformation: • Aral Sea (Kazakhstan) • Brazilian Rainforest • Dubai, UAE (city development) • Students use the Snipping Tool to capture side by side comparisons and paste these into a Word document, typing a comparison.
Plenary	Time: 10 minutes • Ask the children to share the comparisons that they have made. • Praise particularly anyone who has compared using the ruler or area tool. • Ensure that children save their work and shut down their computers safely.

Lesson 13 – Calculating distances and costs	
Goal	Goal 8 – Geographic information and mapping
Learning objective	We are learning to use the ruler measurement tool on Google Earth to calculate distances between farm fields, regional water supplies and main transport routes.
UN Sustainable Development Goal	 SDG 2: Zero Hunger (Target 2.3: Double agricultural productivity and the incomes of small-scale food producers) Improve agricultural planning and increase crop yield
Success Criteria	• I can locate my local community valley using geographic coordinates or name tags in Google Earth • I can activate and use the ruler tool to draw linear path lines • I can calculate and record the exact physical distance in metres between a water source and a farm plot
Introduction	4. Set a challenge on the chalkboard: “If we want to build a water pipe from the river to our dry hillside, how many metres of pipe do we need to buy? How do we measure this without a giant tape measure going up a mountain?” 5. Explain the power of satellite mapping, with satellite mapping we can measure directly from our village to farm borders and transport routes in seconds.
Main lesson	Time: 35 minutes Step 1: Locating our region (10 mins) • Instruct children to click on the Google Earth icon.

	• Search for the local village or the nearest town centre. Have children zoom in until they can identify local fields and waterways. Step 2: Measuring the route (15 mins) • Guide children to the Ruler (Measure) tool in the left-hand toolbar. • Set the units to metres. • Instruct children to make their first click directly on the edge of a local river or spring and their second click on the edge of a nearby dry field crop point. • Read the output display box and have students record this number. Step 3: Calculating pipe cost (10 mins) • Ask students to open Libre Office Calc and start a new spreadsheet. • Children input their measured distance and a sample price (i.e. 25) • Children write a formula $=A2*B2$ to calculate the cost of a pipe.
Plenary	Time: 10 minutes 1. Ask the class, “How does digital mapping save farming families money?” 2. Celebrate children’s success at using maps and budgets! 3. Children close Google Earth and safely shut down laptops

Teaching objectives covered in this unit

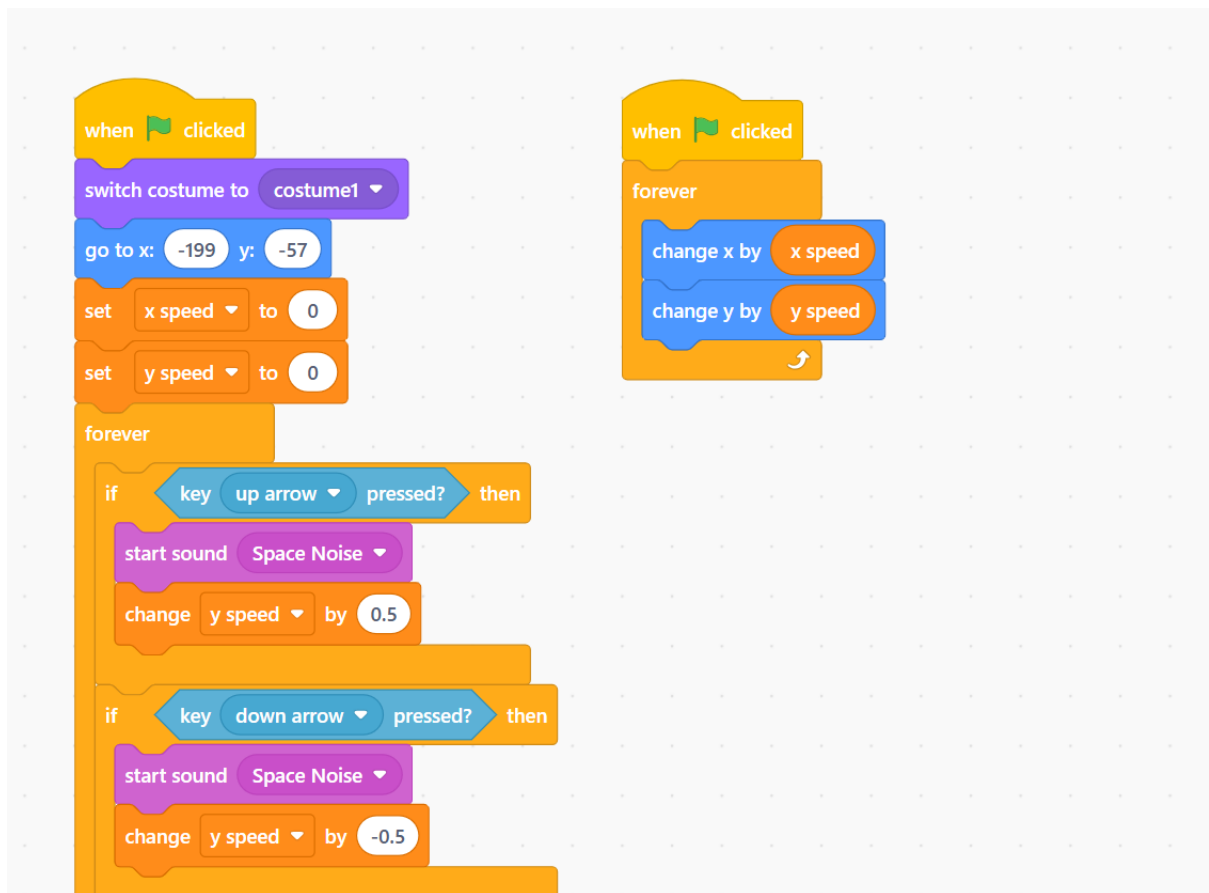
(Highlighted skills are taught in one of the lessons for this development goal)

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3. Use ‘wait’ commands in programs to improve results.	15,19
4. Use different types of loops, i.e. nested lops, repeat until loops.	14, 21
5. Use an ‘if, elif, else’ conditional structure; use nested conditions.	15, 19, 20
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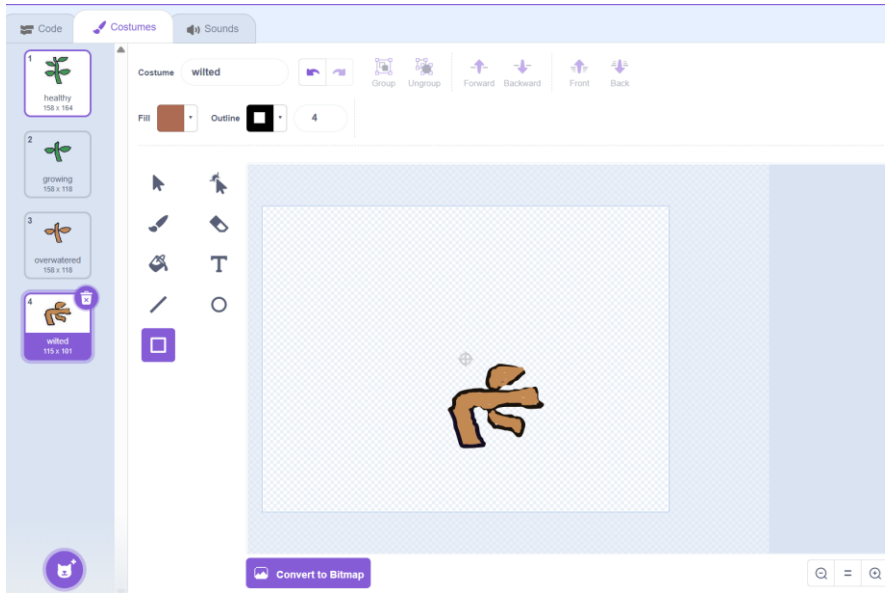
GOAL 4 – INTRODUCTION TO SOFTWARE LOGIC

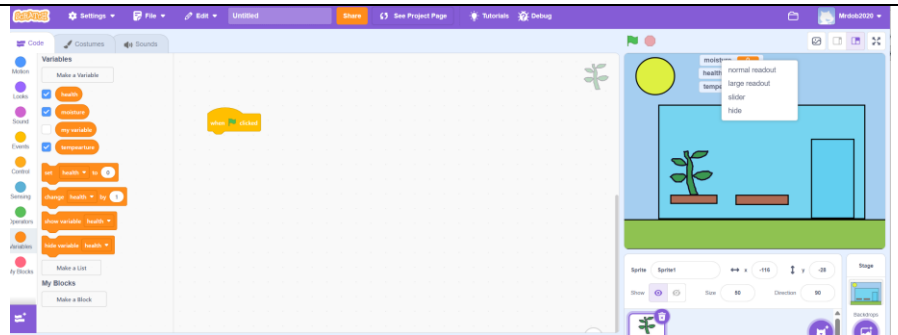
Goal 4



INTRODUCTION TO SOFTWARE LOGIC

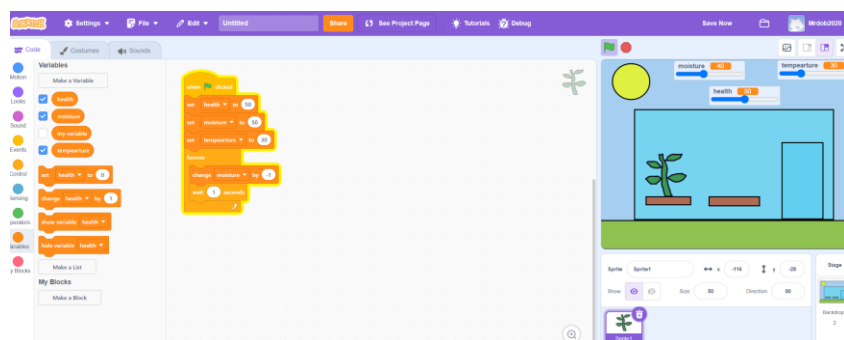
Lesson 14 – Programming costume changes based on variables	
Goal	Goal 5 – Introduction to software logic (Scratch) Video tutorial available here Finished examples of Scratch projects are available here
Learning objective	We are learning to program a simulation of a smart greenhouse
UN Sustainable Development Goal	 SDG 2: Zero Hunger (Target 2.4: Ensure sustainable food production) Increase the productivity of greenhouses that are used to grow food
Success Criteria	• I can start a new Scratch project • I can paint a plant sprite with three costumes • I can add an appropriate greenhouse background • I can create three variables: moisture, temperature and health and control these with sliders • I can use a range of green operator blocks
Introduction	Time: 15 minutes 1. Have a discussion with the class about some of the things that plants need to stay healthy. Why would it be difficult to provide these if you had a lot of plants in a greenhouse? 2. Ask the children if there are ways that we could use technology to help with this. (we could use technology to monitor the needs of plants and maybe to automatically provide water, light etc.)

	3. Explain that in this lesson, we are going to simulate a 'smart' greenhouse, which uses technology to monitor the plants.
Main lesson	Time: 35 minutes Step 1: Setting up a Scratch project (5 mins) • Direct the children to open a new Scratch project and to delete the cat sprite. Ask them to draw a new sprite, a plant, with four costumes: healthy, growing, overwatered and wilted. • Ask children to draw or select a greenhouse background.  Step 2: Creating variables and viewing sliders (10 mins) • Guide children to create three variables: health, moisture and temperature. • Show children how to turn on the sliders so that they can control the variable amounts by sliding them. (Right click on the variables and choose 'slider')



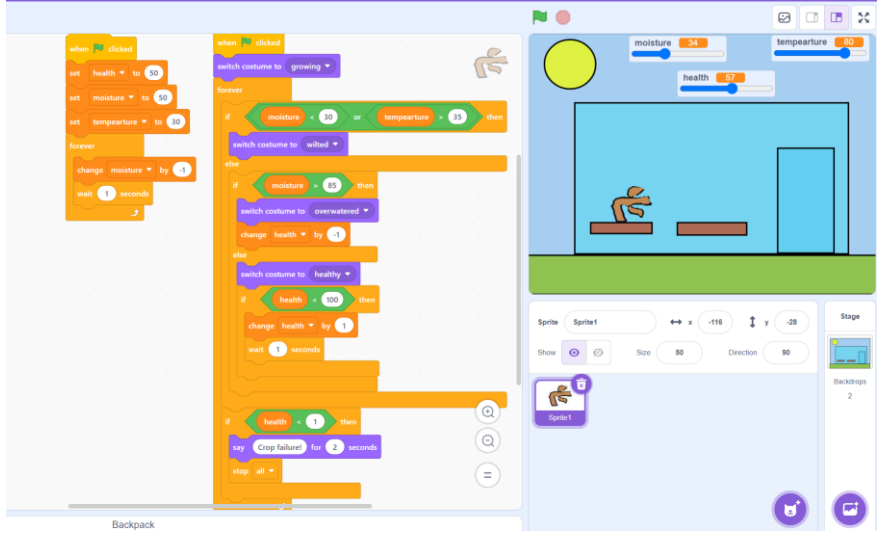
Step 3: Programming variables to change (15 mins)

- Program the health variable to set to 50 when the green flag is clicked. Program the temperature to set to 30 and the moisture to set to 50.
- Program the moisture variable to change by 1 every second.



Step 4: Programming variables to control each other (10 mins)

- (This step would benefit from discussion about how the variables need to control each other.)
- Show the children how they can program a forever loop, stating:
Forever:
If the moisture is less than 3- or temperature is > 35, switch costume to wilted and change health by -2.
Else:
if moisture > 85 then
switch to costume overwatered and change health by -1

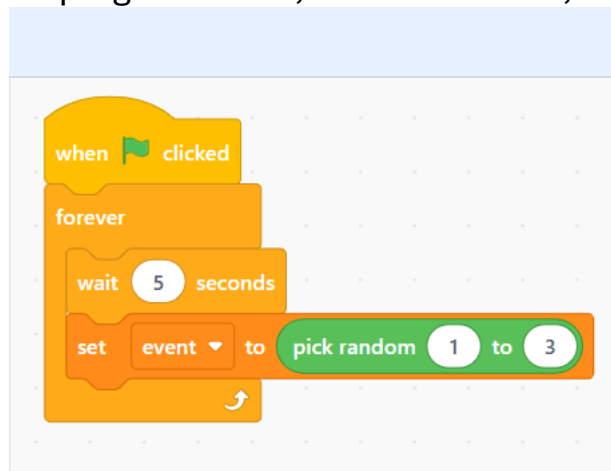
	else switch costume to healthy If health < 100 then change health by 1 If health < 1 say Crop failure and stop all 
Plenary	Time: 10 minutes 1. Ask the children whether the values we discussed worked, or whether they had to change the values to make the simulation better 2. How could we improve the simulation further? (Change the values by clicking on other things, i.e. a sun sprite to change the temperature) 3. Ask children to save their work and sign out of their computers.

Lesson 15 – Programming interdependent variables	
Goal	Goal 5 – Introduction to software logic (Scratch) Video tutorial available here Finished examples of Scratch projects are available here
Learning objective	We are learning to simulate the buying and selling in the changing agricultural market
UN Sustainable Development Goal	 SDG 2: Zero Hunger (Target 2.c: Adopt measures to ensure the proper functioning of food commodity markets) Simulating the supply and demand that drives food markets
Success Criteria	• I can create a new Scratch project with a character and a farm background • I can add two buttons for buying and selling • I can create four variables: cash, event, ginger price and seeds • I can program events to set to a random number • I can program other variables to change when buttons are clicked, and over time
Introduction	Time: 15 minutes 1. Ask children what they know about buying and selling crops. What can affect how many crops you have? What happens to prices if there is less available? 2. Explain that in this project, we are going to simulate the market, which is how the prices of crops changes. IN our simulation, we are only going to use ginger.
Main lesson	Time: 35 minutes Step 1: Setting up a Scratch project (5 mins)

- Direct children to open a new Scratch project, delete the cat sprite and add a character and a farm background.

Step 2: Adding random events (5mins)

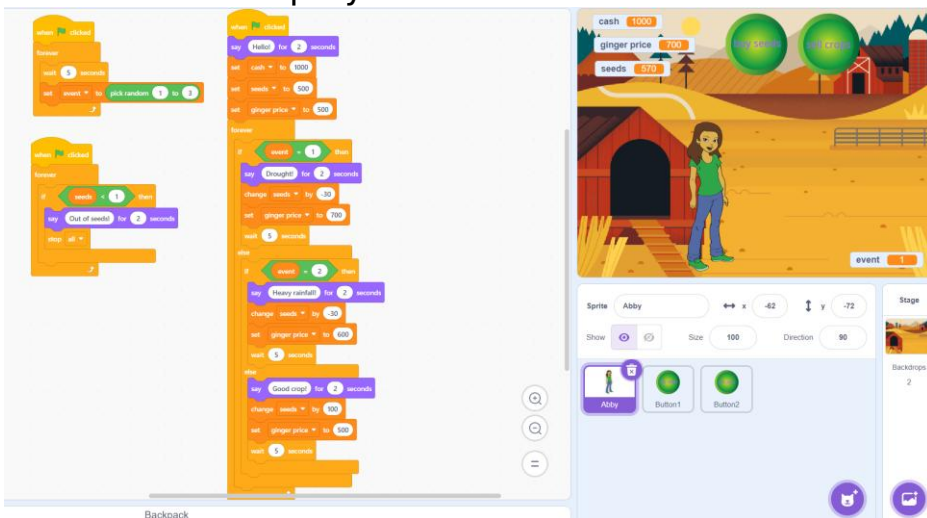
- Guide the children to create four variables: event, cash, seeds and ginger price.
- Show them how to program the event variable to set to a random number form 1 to 3 when the program starts, after 5 seconds, repeatedly.



Step 3: Adding buy and sell buttons (5 mins)

- Show the children how to add two buttons, one to buy seeds and one to sell seeds. Add text to the buttons.

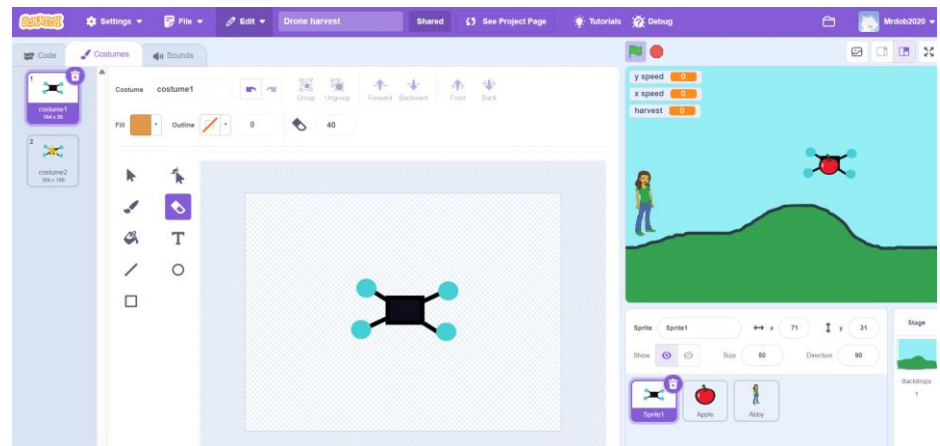


	Step 4: Programming variables to change (15 mins) • Show the children how to program the variables to change, depending on the event that is set randomly. • Generally, when problems occur, the number of seeds (stock) decreases, but the value of the crops increases. If the crop is good, the amount of stock increases, but the price decreases. • This could lead to discussion about economics with the class, particularly once children have had a chance to try out their simulations. 
Plenary	Time: 10 minutes 1. Ask the class how they found this project. Did they change the values provided by the teacher? 2. Do they think that this is an accurate reflection of economics of farming? Why? Why not? 3. Instruct children to save their work and log off their computers.

Lesson 16 – Programming movement with variables	
Goal	Goal 5 – Introduction to software logic (Scratch) Video tutorial available here Finished examples of Scratch projects are available here
Learning objective	We are learning to program a drone to help look after crops
UN Sustainable Development Goal	 SDG 2: Zero Hunger (Target 2.4: Ensure sustainable food production systems) Programming drones to enable precision farming and improve crop yield
Success Criteria	• I can create three variables: x speed, y speed and harvest • I can program a sprite to move according to variables • I can program a sprite to change costume if variables reach a certain amount • I can program a sprite to appear and follow another sprite
Introduction	Time: 15 minutes 1. Discuss drones with children, possibly showing some pictures if they are available. 2. How can drones help farmers? (Monitoring crops, collecting things) 3. What obstacles would drones have to avoid? (terrain, animals) 4. Explain to children that in this lesson, we are going to simulate a drone harvesting crops on a farm.
Main lesson	Time: 35 minutes

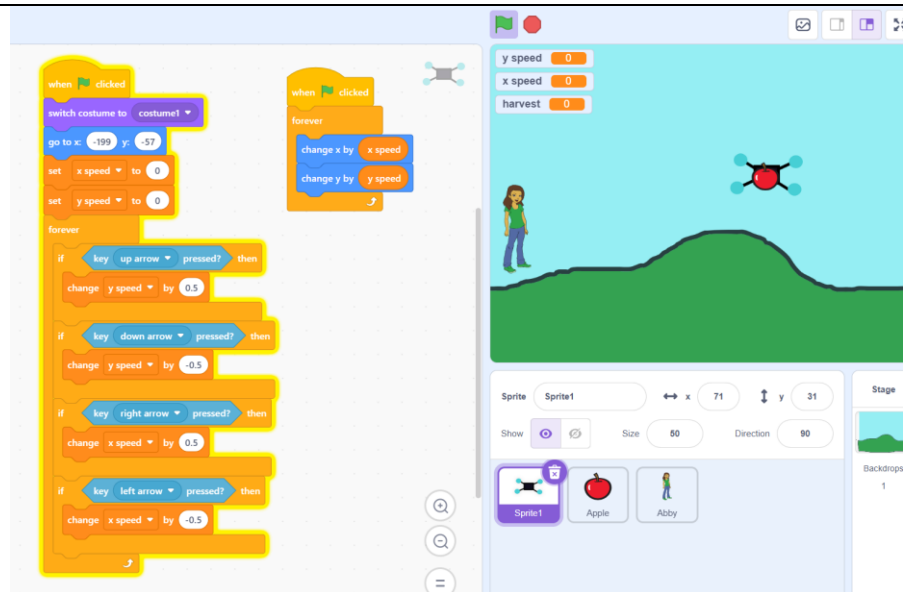
Step 1: Creating a background and drone sprite (5 mins)

- Ask the children to create a new Scratch project and delete the cat sprite.
- Direct the children to draw a drone sprite with two costumes, one a damaged costume.
- Ask them to draw a background with a hill obstacle.

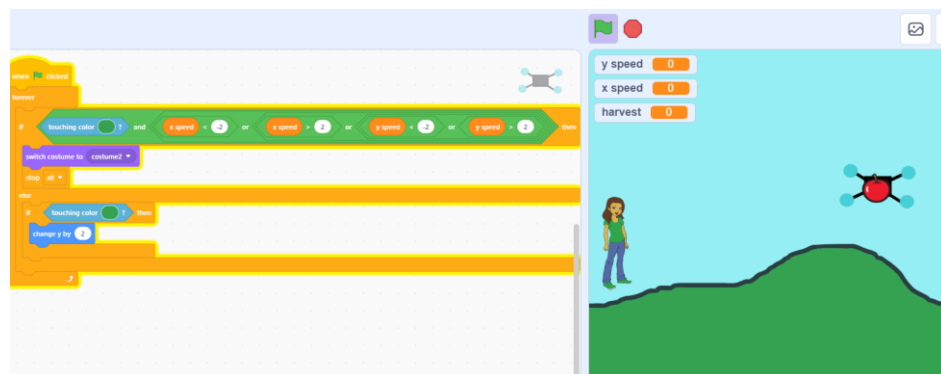


Step 2: Programming the drone (10 mins)

- Guide the children to create three variables: x speed, y speed and harvest.
- Instruct children to program the drone to move depending on how the arrow buttons are pressed and increase the variables.

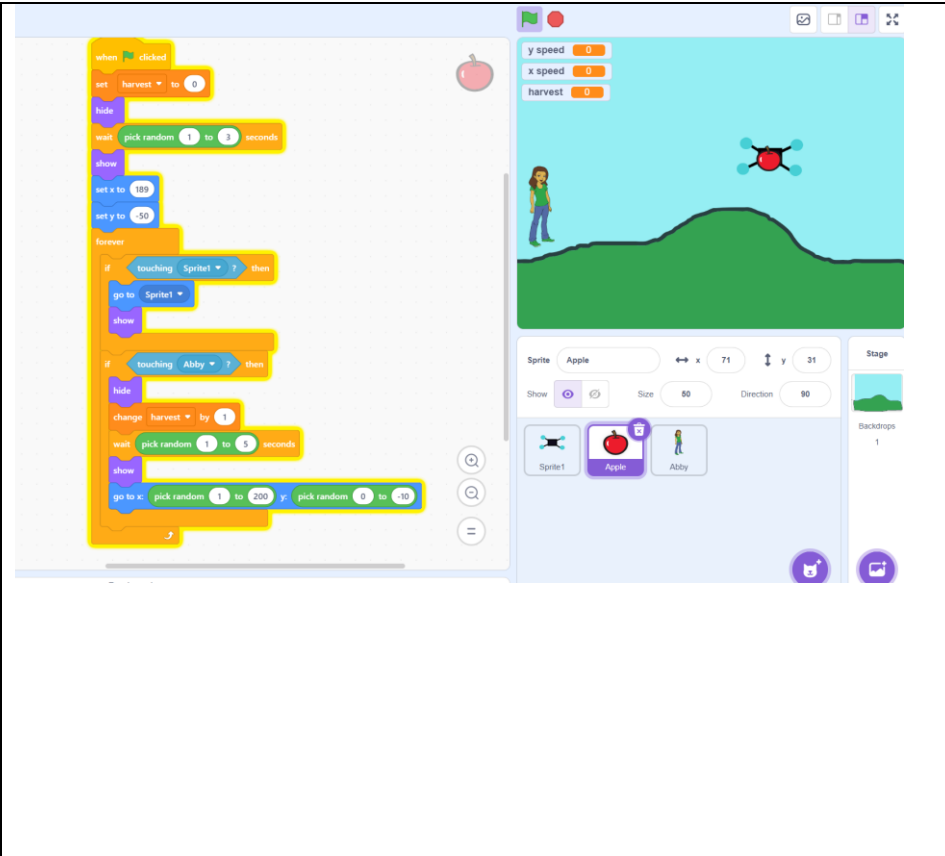


- Program the drone to change costume if the x speed or y speed variable gets above 2 or below -2.
- Program the drone to 'bounce' up if it touches the green colour.



Step 3: Programming the fruit (15 mins)

- Show children how to program some fruit to appear and go to specific coordinates
- Show children how to program the fruit to go to the drone sprite if it is touching it, and then disappear when it gets back to the farmer and change the harvest score.

	 The image shows a Scratch project for a drone game. On the left is the code editor with the following script: <pre> when clicked set harvest to 0 hide wait pick random 1 to 3 seconds show set x to 150 set y to -50 forever if touching Sprite1? then go to Sprite1 show if touching Abby? then hide change harvest by 1 wait pick random 1 to 5 seconds show go to x: pick random 1 to 200 y: pick random 0 to -10 </pre> On the right is the stage view. It features a green hill backdrop, a red drone sprite, and a character named Abby. The top right shows variables for 'y speed', 'x speed', and 'harvest', all set to 0. The bottom right shows the sprite list with 'Sprite1', 'Apple', and 'Abby'.
Plenary	Time: 10 minutes 1. Discuss how well we were able to program drones in this lesson, and the benefits of programming movement by a variable amount. 2. Discuss how we used 'or' logic in this lesson to control several possible outcomes. 3. Talk about how we could further improve the game (i.e. add sounds) 4. Ask children to save their projects and log off their computers.

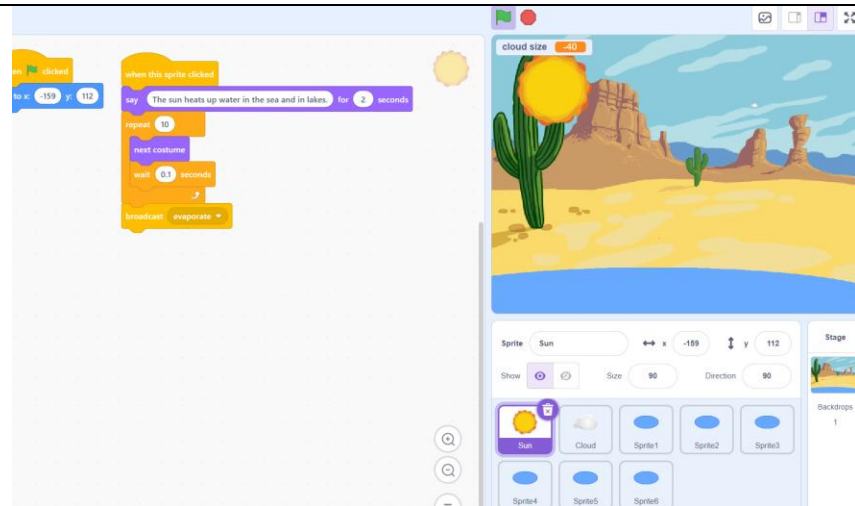
Lesson 17 – Programming the water cycle	
Goal	Goal 5 – Introduction to software logic (Scratch) Video tutorial available here Finished examples of Scratch projects are available here
Learning objective	We are learning to program a simulation of the water cycle
UN Sustainable Development Goal	 SDG 6: Clean Water and Sanitation (Target 6.6: Protect and restore water-related ecosystems) Model how water moves through terrestrial and atmospheric reservoirs
Success Criteria	• I can start a new project and add the sprites needed to show the aspects of the water cycle, as well as a suitable background. • I can program the sun sprite to broadcast a message when clicked • I can program the cloud sprite to increase its size when it received the broadcast and then move • I can program the rain sprites to fall down and disappear.
Introduction	Time: 15 minutes 1. Show
Main lesson	Time: 35 minutes Step 1: Setting up the Scratch project (5 mins) • Direct children to start a new Scratch project and delete the cat sprite.

- Ask them to add a suitable background with some water at the bottom.
- Direct the children to add the following sprites: a sun, a cloud 5 or 6 raindrops.
- Ask children to add a variable called 'cloud size'.



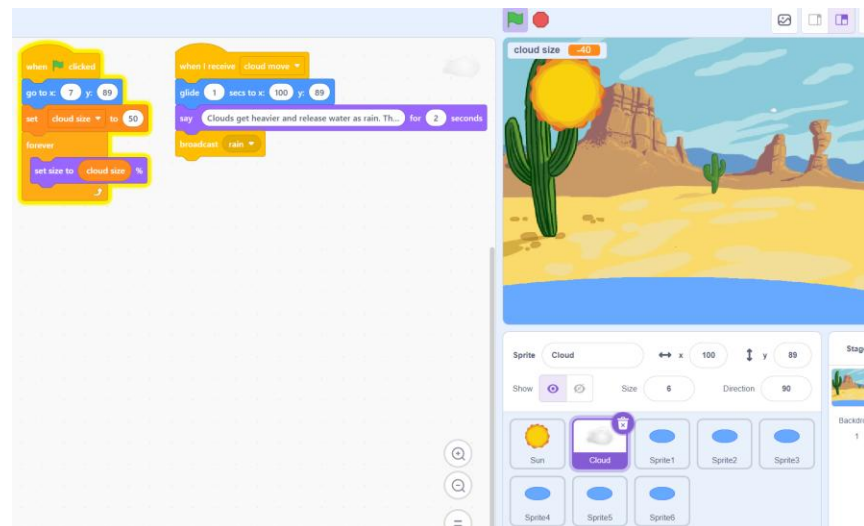
Step 2: Programming the sun sprite (10 mins)

- Guide the children to program the sun sprite to say a message, explain the water cycle when clicked.
- The sun sprite should then change its costume to make it flicker (rotate slightly 10 times) and then broadcast a message called 'evaporate'



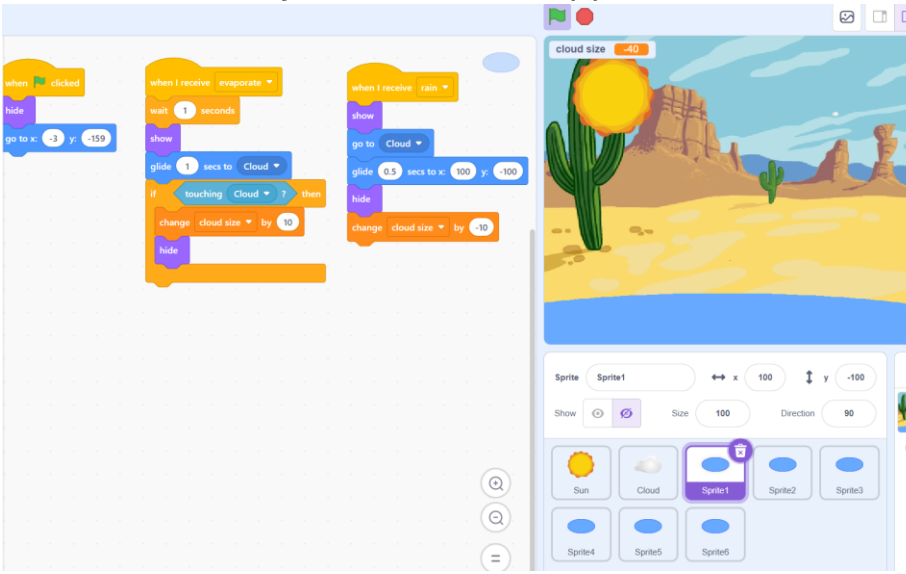
Step 3: Programming the cloud sprite (15 mins)

- Show the children how to program the cloud sprite to forever set to the cloud size variable.
- Show the children how to program the cloud sprite to glide sideways when it received the broadcast and send another message called 'rain', also explaining the next stage of the water cycle.



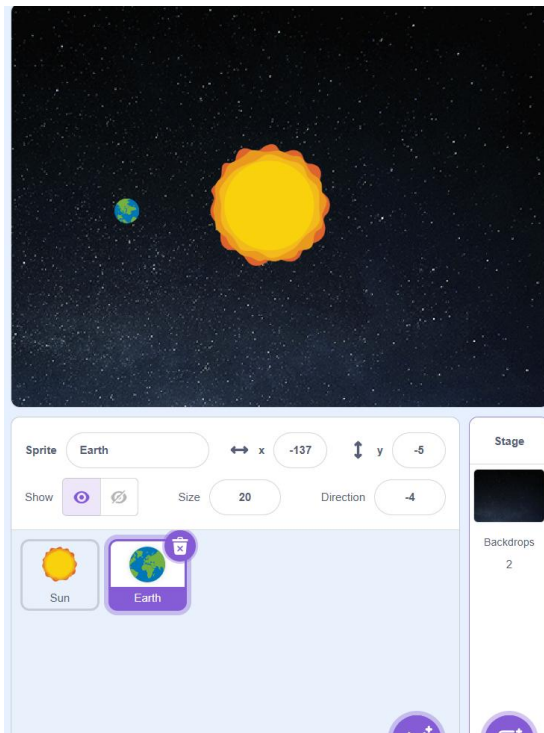
Step 4: Programming the raindrop sprites (5 mins)

- Show the children how to program the raindrops to appear and fall down to the river or sea, before

	hiding. Each raindrop should change the size of the cloud by -10 when this happens.  The image shows a Scratch project with a desert background. The code area contains three scripts: 1. 'when clicked' script: hide, go to x: -3, y: -159. 2. 'when I receive evaporate' script: wait 1 seconds, show, glide 1 secs to Cloud, if touching Cloud? then change cloud size by 10, hide. 3. 'when I receive rain' script: show, go to Cloud, glide 0.5 secs to x: 100, y: -100, hide, change cloud size by -10. The stage view shows a sun (Sprite1), a cloud (Cloud), and several raindrops (Sprite2-Sprite6). The cloud's size is currently -40.
Plenary	Time: 10 minutes 1. Give children time to explore each other's versions of the water cycle. 2. Ask the children what this has helped them to understand about the water cycle. What aspects are missing? (rivers, other types of precipitation such as snow). 3. Ask children to save their work and log off their computers.

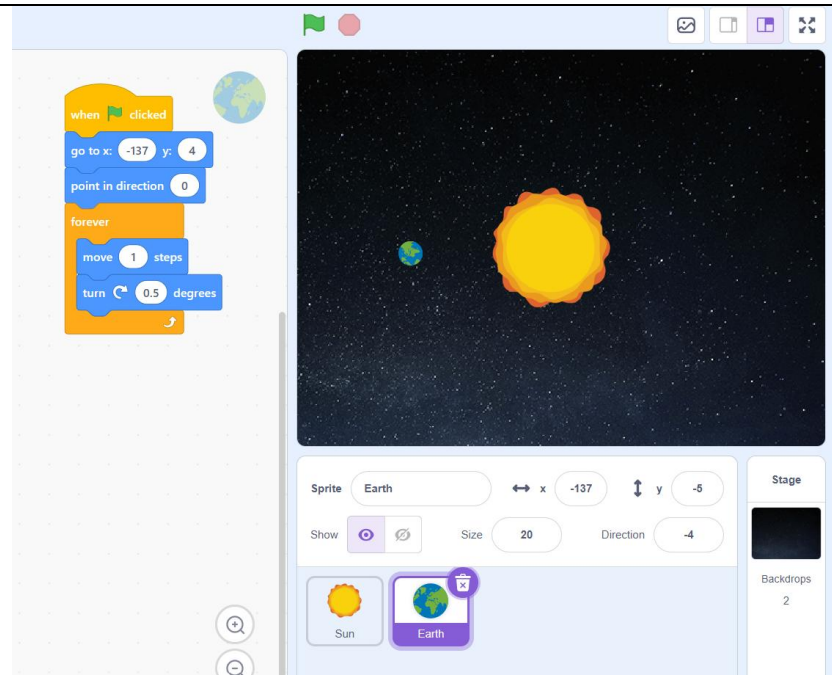
Lesson 18 – Programming the solar system	
Goal	Goal 5 – Introduction to software logic (Scratch) Video tutorial available here Wide range of Microbit tutorials available here
Learning objective	We are learning to program a simulation of the Solar System
UN Sustainable Development Goal	 SDG 4: Quality Education (Target 4.4: ...Substantially increase the number of youth who have relevant skills...) Learning to use computers to develop academic skills
Success Criteria	• I can start a new Scratch project with a Sun, Earth and space background • I can program a planet to start in the correct place • I can use trial and error to program sprites to move and turn the correct amount
Introduction	Time: 15 minutes 1. Show the children a picture of the planets in the Solar System. Ask them how the planets move and record this as an algorithm on the board. 2. Explain that in order to make the planets orbit in Scratch, we need to break this movement into move and turn. We can use trial and error, as well as maths to program the plantes to move the right amount.
Main lesson	Time: 35 minutes Step 1: Setting up the Scratch project (5 mins)

- Direct children to start a new Scratch project and delete the cat sprite.
- Show them how to add a space background and a sun, and Earth Sprite. Encourage them to think carefully about the sizes of the sprites, as we might have fit 8 planets in!



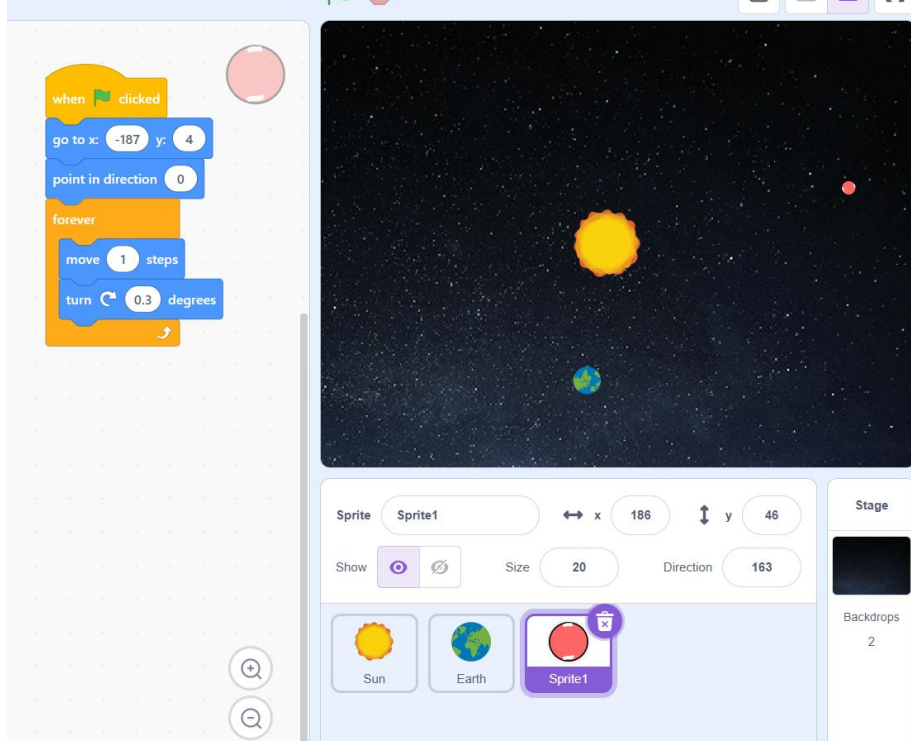
Step 2: Programming the Earth sprite to orbit (10 mins)

- Guide children in programming the Earth sprite to go to a certain place, point up and then move and turn in a forever loop.
- Some possible code is given below, but this will benefit from testing, trial and error.



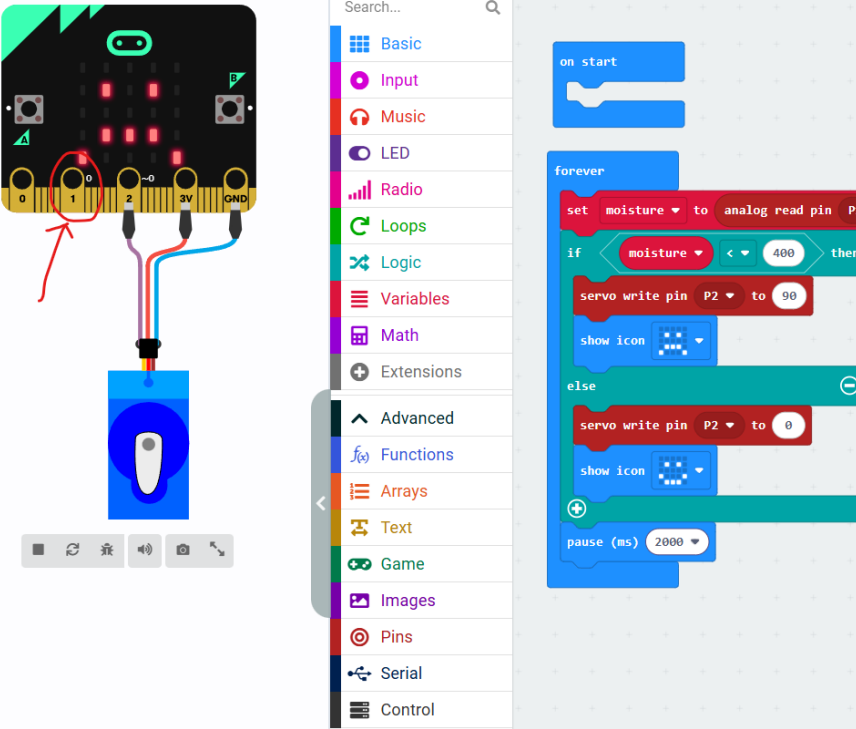
Step 3: Programming a second planet to orbit (15 mins)

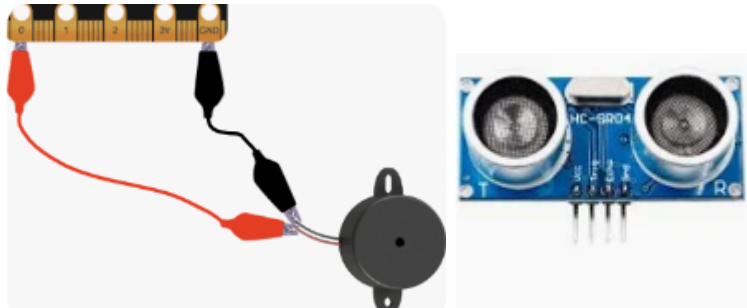
- Guide children to add a second planet sprite.
- Show them how to copy the code from Earth onto it and adjust the code so that the second planet turns more or less.
- Children add other planets when they have been successful.
- Children may have to make the sprites smaller than they initially thought!

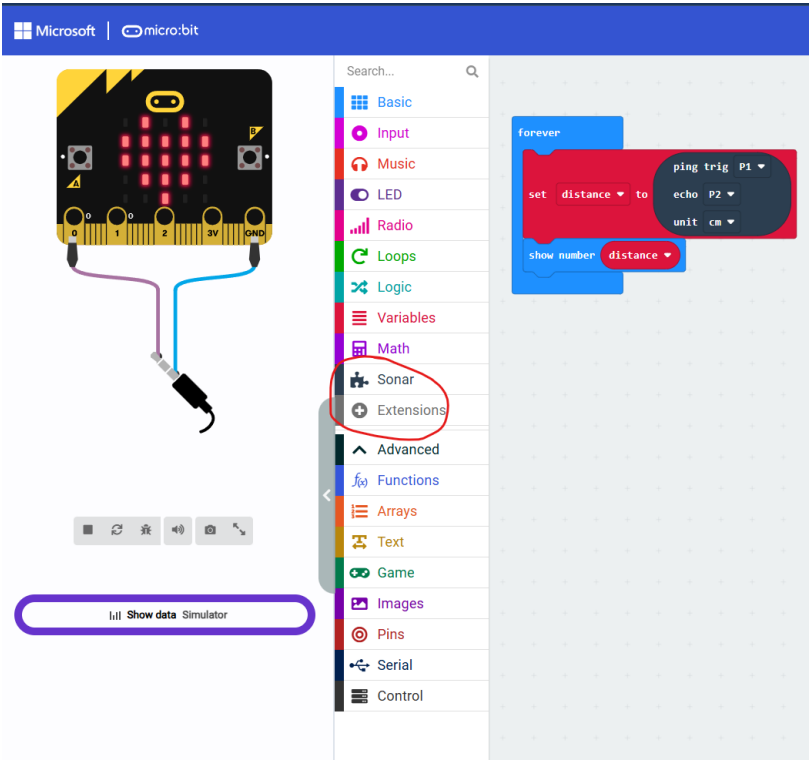
	
Plenary	Time: 10 minutes 1. Ask the class to play their Solar Systems and their approaches to coding. 2. Was trial and error the best approach, or could we use Maths? 3. Ask children to save their work and log off their computers.

Lesson 19 – Programming a Microbit water gate	
Goal	Goal 5 – Introduction to software logic (Microbit) Video tutorial available here Wide range of Microbit tutorials available here
Learning objective	We are learning to program a Microbit to control a water supply For this lesson, children will need Microbits, as well as crocodile clips, wires and a servo motor 
UN Sustainable Development Goal	 SDG 6: Clean Water and Sanitation (Target 6.4: Substantially increase water-use efficiency across all sectors) Conserve water by building systems that only use water when it is needed.
Success Criteria	• I can connect crocodile clips to the Microbit to control a water sensor (voltage) and a servo motor • I can create a variable called moisture • I can set the moisture variable to the reading from the nails • I can program a servo motor to allow water to a plant when it is thirsty
Introduction	Time: 15 minutes

	1. Introduce the idea of hydroponic greenhouses to children. Explain that these are greenhouses where water is controlled by sensors, according to the plants' needs 2. Ask the children how these sensors could function. Elicit the use of an if/else condition
Main lesson	Time: 35 minutes Step 1: Microbit hardware setup (5 mins) • Show the children how to open the MakeCode website and start a new project: https://makecode.microbit.org/ • Children should put 2 nails into the soil. One should be connected to the 3V pin on the Microbit and the other to P1 on the Microbit. • The servo motor should be connected to: Red wire → 3V (or external battery if power drops) Brown wire → GND Orange wire → P2 Step 2: Creating a variable (10 mins) • Tell the children to make a variable and call it 'moisture' • Guide the children to press on the 'advanced' block and select pins in Makecode. • Tell them to program the moisture variable to equal the reading from the analogue pins (the nails). Step 3: Programming the water gate (15 mins) • Children use an if/else structure to program the servo to open if the moisture is low, or to close if it is high. • Children should then add a gravity-powered water supply above the plant so that the servo

	motor opens or closes a gate and lets water fall onto the plant. Children can test their virtual device by clicking on the area (circled below) and changing the moisture level (the current passing between the nails). 
Plenary	Time: 10 minutes - Celebrate the children's success and if possible, set up some plants around the room that can be watered by these devices. - Ask the children how their devices could be further improved? (An alarm?) - Ask children to save their projects and log off the laptops.

Lesson 20 – Programming a movement alarm	
Goal	Goal 5 – Introduction to software logic (Microbit) Video tutorial available here Wide range of Microbit tutorials available here
Learning objective	We are learning to program an ultrasonic sensor to create an animal intruder alarm For this lesson, children will need Microbits, as well as crocodile clips, buzzers and an ultrasonic sensor 
UN Sustainable Development Goal	 SDG 15: Life on Land (Target 15.5: “Protect and prevent the extinction of threatened species”) Manage human-wildlife interactions without harming wild animals
Success Criteria	• I can connect a distance sensor and a buzzer to a Microbit. • I can create a variable called distance • I can program the buzzer to sound using an if/else structure

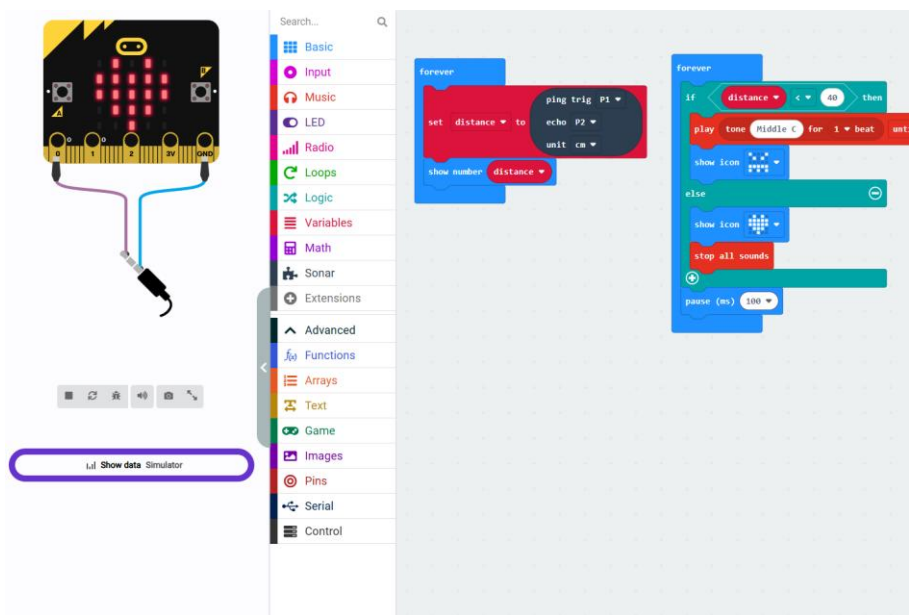
Introduction	Time: 15 minutes 1. Ask the children what kind of problems animals can cause on a fer, (if they are not supposed to be there) 2. Ask how we can alert farms to animals if they are not supposed to be there (we can set up alarms) 3. Explain that in this lesson, we are going to create alarms that respond if animals get too close.
Main lesson	Time: 35 minutes Step 1: Setting up a new Makecode project (5 mins) • Show the children how to open the MakeCode website and start a new project: https://makecode.microbit.org/ • Tell students to click on the extensions and chose the sonar extension 

Step 2: Creating a variable (10 mins)

- Guide students to create a new variable called 'distance'
- Set this distance variable to the input from the sensor.
- Display the distance variable on the screen

Step 3: Programming the buzzer to sound and LED screen to react (15 mins)

- Instruct students to use an if/else structure to program the buzzer to sound and the screen to display a pattern if the distance variable decreases below a certain amount:



Step 4: Building the physical system

- Ensure that the buzzer is connected to the P0 and GND sockets of the Microbit.
- Connect the ultrasonic sensor to P1, P2 and GND.

Plenary	Time: 10 minutes 1. Ask the class how successful they think these devices will be. Is there any way that they could be improved, either in the programming or physical design? 2. Celebrate the success of the class, including their step-by-step testing. 3. Ask the children to save their work and shut down their computers.
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Lesson 21 – Programming a temperature alarm	
Goal	Goal 5 – Introduction to software logic (Microbit) Video tutorial available here Wide range of Microbit tutorials available here
Learning objective	We are learning to control a servo motor to react when temperature gets too hot
UN Sustainable Development Goal	 SDG 13: Climate Action (Target 13.3: “Improve education, awareness-raising and institutional capacity on climate change mitigation”) Creating digital systems to respond to changing temperatures
Success Criteria	• I can set up a new Microbit project • I can collect the temperature readings and store these as a variable • I can use an if/else structure to control a servo motor to open or cover plants. • I can connect a servo motor to a Microbit controller.
Introduction	Time: 15 minutes 1. Show the children a picture of a greenhouse and ask how technology can help to keep a greenhouse stable and grow plants. 2. Discuss how servo motors work, they can be set to turn to a particular angle. Discuss how this might work using sensor readings, like light or temperature. 3. Explain that in this lesson, we are going to build an automatic cover that opens and closes on plants and stops them from getting too hot.

Main lesson

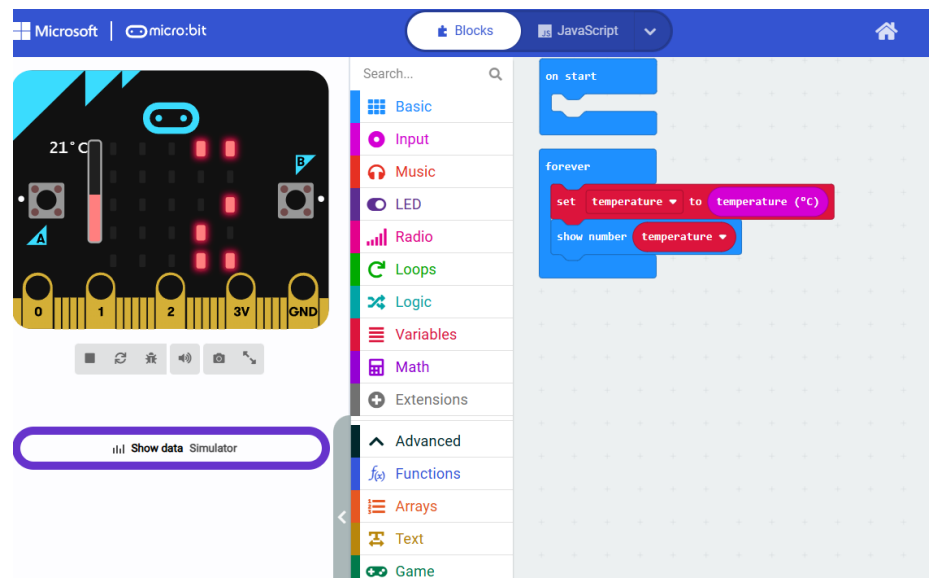
Time: 35 minutes

Step 1: Setting up a new Makecode project (5 mins)

- Show the children how to open the MakeCode website and start a new project:
<https://makecode.microbit.org/>

Step 2: Creating a temperature variable (10 mins)

- Guide the children to create a new variable and name it 'temperature'.
- Guide them to set the temperature variable to the reading for the temperature on the Microbit (inside a forever loop).



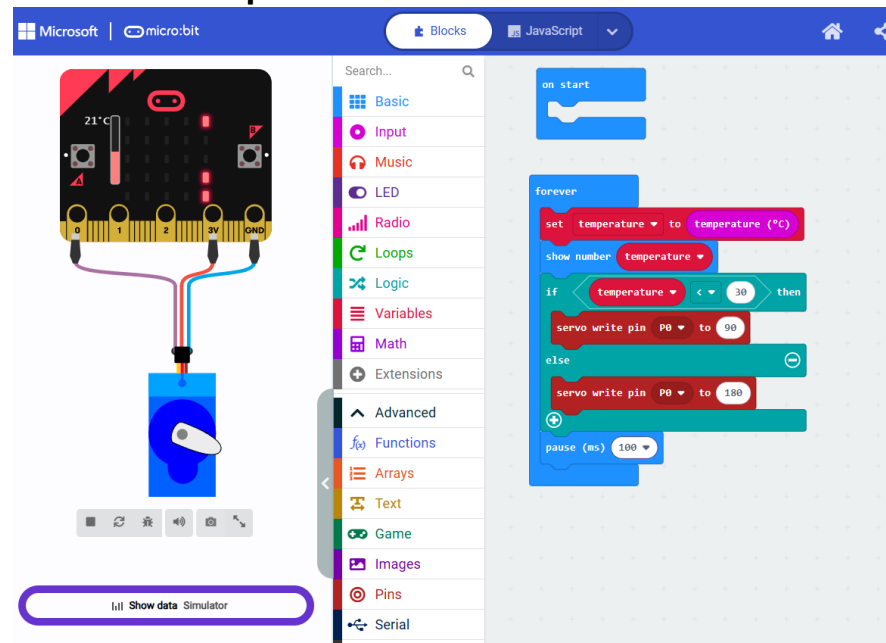
Step 3: Connecting a servo motor to the Microbit (10 mins)

- Show the children how to attach a servo motor to the Microbit.

- The servo motor should be connected to pins 0, 3V and GND (as shown).

Step 4: Using an if/else structure to control the servo motor (15 mins)

- Show chidlernw how to use an if/else structure to program the servo motor to turn depending on the temperature:



Plenary

Time: 10 minutes

1. Ask the class how successful they think their smart greenhouses were.
2. How could they be improved?
3. Ask the children to save their work and log off the computers.

Teaching objectives covered in this unit

(Highlighted skills are taught in one of the lessons for this development goal)

Intermediate level (age 10 – 12) – teacher assessment of children	
ICT Skills	Skills taught in lesson(s):
1. Name the core parts of a computer. Manually connect and configure external devices (i.e. Speakers, mouse, Microbit).	1, 3
2. Navigate Windows file systems; create, rename and organise files and folders.	1
3. Use a full range of keyboard shortcuts (Ctrl+v, x, c, z, y, b, l, a).	2
4. Type accurately at a speed of 20 words per minute using two hands and correct home row positioning.	2
5. Navigate an internet browser, using back/refresh buttons, managing bookmarks, windows and multiple tabs.	2, 4, 5, 7, 9
6. Create advanced text documents using formatting tools, text boxes, images, tables and using proofreading tools.	6, 8, 10, 34
7. Create a dynamic presentation using unified styles, lists, diagrams, slide transitions and animations.	33
8. Create digital designs with precision using object grouping, custom layer fills and alignment tools.	33
9. Add data to a spreadsheet and use basic formulas (=SUM)	29
10. Generate graphs and tables to view and interpret data	30, 31
Digital literacy, AI literacy and E-safety	Skills taught in lesson(s):
1. Explain some ICT rules beyond school, i.e. copyright, age limits.	1, 26
2. Explain the concept of a 'digital footprint' and its effects.	24
3. Explain the effects of sharing personal information online.	24
4. Give clear examples of cyberbullying and articulate its emotional and legal consequences.	25
5. Describe how technology can be used in a healthy lifestyle.	25
6. Explain a procedure for reporting inappropriate content, contact and grooming online.	27
7. Critically assess the reliability, origin and trustworthiness of internet search results rather than clicking the first link.	28, 29
8. Identify advanced generative AI tools and their effects in society. Explain how AI and machine learning works using algorithms.	28, 29
9. Identify issues relating to misuse of AI including bias, deepfake misinformation, and issued with how AI-generated text can confuse younger users	28,29

Programming and computational thinking	Skills taught in lesson:
1. Explain the difference between ‘input’ and ‘output’; give algorithms for both and program inputs and outputs in physical devices and in on-screen environments.	14, 19, 20
2. Program precise movement using positive and negative values.	16, 18, 18
3. Use ‘wait’ commands in programs to improve results.	15, 19
4. Use different types of loops, i.e. nested lops, repeat until loops.	14, 21
5. Use an ‘if, elif, else’ conditional structure; use nested conditions.	15, 19, 20
6. Create more than one variable for a program, program movement by a variable amount.	14, 15, 16
7. Independently decompose problems, look for repetition and debug.	15, 17, 18
8. Debug logically, based on behaviour. Identify sections of code that work.	14, 17, 18
9. Explain the components that make up a computer network and explain how data is transmitted across networks including the internet. Differentiate the internet from the world wide web.	22
10. Explain how search engines work and rank web pages (keywords, algorithms, paid ads), select reliable results.	23

GOAL 5 – UNDERSTANDING COMPUTER SYSTEMS AND NETWORKS

Goal 5



UNDERSTANDING COMPUTER SYSTEMS AND NETWORKS

Lesson 22 – Understanding networks	
Goal	Goal 7 – Understanding computer systems and networks
Learning objective	We are learning to identify the physical components of local internet pathways (Router vs Server) and recognise secure internet links (https://)
UN Sustainable Development Goal	 SDG 9: Innovation and Infrastructure (Target 9c: Access to ICT) Building remote-to-valley wireless communication nodes demonstrates how rural areas can build low-cost ICT infrastructure
Success Criteria	• I can check my system tray to ensure my device is connected to the school LAN or Wi-Fi • I can type an offline IP address to access our local school resource hub • I can identify the padlock icon and explain why secure browser connections protect financial transactions
Introduction	Time: 15 minutes 1. Draw a circle representing our school on the board. Draw another representing a bank in Kathmandu. 2. Ask, “If we want to load an agricultural book from our school library, do we need to send a signal all the way to Kathmandu?” (No, it can stay inside our school walls). 3. Explain Local Area Networks (LANs): A LAN connects us to our school’s server down the hall without it needing to use the global internet. Today, we will master navigating local area network servers and learn how to keep our data secure when we connect to the wider world.

Main lesson	Time: 35 minutes Step 1: Checking network connections (5 mins) • Instruct students to find the network adapter or Wi-Fi status icon in their taskbars • Show them how to view connected networks to ensure they are connecting to the local school router Step 2: Navigating the Intranet Gateway (15 mins) • Ask students to open the Chrome internet browser. Instead of typing a website name, show them how to type the school's IP address. • Watch the local offline database landing page load. Show them that even without the outside internet connected, they can still read books and fetch resources instantly. Step 3: Security and encryption training (15 mins) • Guide students to look at the address bar. Point out the padlock symbol next to a site address. • Explain the difference between http and https (One is secured) ask the children to visit common websites and notice this.
Plenary	Time: 10 minutes 1. Ask the children: "If we are doing banking or shopping online, what should we look for in the address bar?" (https) 2. Reinforce that knowing about how networks work keeps you safe from online scams 3. Shut down the internet and shut down laptops

Lesson 23 – Understanding search algorithms	
Goal	Goal 7 – Understanding computer systems and networks
Learning objective	We are learning to explain the three stages of web searching: (crawling, indexing and ranking) and to identify factors that influence search result order
UN Sustainable Development Goal	 SDG 9: Innovation and Infrastructure (Target 9c: Access to ICT) Develop understanding of the digital systems that transmit information
Success Criteria	• I can describe how automatic web crawlers follow links to build an index • I can list key ranking factors: keyword relevance, link popularity (authority) and sponsored ads • I can spot the difference between organics search results and sponsored advertisements
Introduction	Time: 15 minutes 1. Ask the children what they think happens when they perform a Google search (or another search engine). What do they see happening in front of them? What don't we see happen? 2. Where do companies want their search results to appear? (near the top of results). 3. How do search engines decide which results to show first?
Main lesson	Time: 35 minutes Step 1: Explaining the three search engine stages (10 mins) • Explain that when you search the internet, you are not searching the whole internet live in real time.

	Instead, you are searching a library stored in data centres. There are three steps: 1) Crawling: Automated bots ('spiders' or 'crawlers') follow links from page to page across the web continuously 2) Indexing: The crawler reads words and keywords and files them into a massive searchable database (like a book index). 3) Ranking: When a user types in a search query, an algorithm scores pages to decide which will appear on top. Step 2: Unplugged activity - acting out the algorithm (10 mins) • Divide students into groups. Give each group 4 index cards representing different web pages for the query "Best Apple Pie Recipe" • Page A title "Grandma's Apple Pie." Mentions apple pie 15 times, has 0 links from other sites. • Page B title: "Quick fruit deserts". Mentions 'apple' twice, liked to by 50 famous cooking blogs. • Page C title: "Apple Pie mastery" – High-quality recipe, linked to by 5 top chef sites, but includes a small tag saying "Sponsored/Ad" • Page D title: "Buy Apple phones". Mentions Apple 100 times, no baking information. Student task: Ask the students to rank the cards from 1 – 4 based on relevance, quality and ad status and discuss why page D should not win. Step 3: Live search discussion (10 mins) • Perform a live search in front of the class. (e.g. "best running shoes") • Guide students to notice sponsored results and the ranking of other results
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	• Discuss why ads are shown at the top. Are they the best results? Step 4: Search term check (5 mins) • Model a different search, i.e. ‘apple’ v ‘apple recipe’ v ‘apple fruit history’. • How are the results different? • Observe how certain words drastically alter the search results
Plenary	Time: 10 minutes 1. Ask the children how what we have learned this lesson will help them when they are searching. 2. Discuss critical thinking before we click on search results, not just accepting the top results and looking at sources before we click on results. 3. Discuss how accepting AI results is not always the best strategy and where AI results come from

Teaching objectives covered in this unit

(Highlighted skills are taught in one of the lessons for this development goal)

Intermediate level (age 10 – 12) – teacher assessment of children	
ICT Skills	Skills taught in lesson(s):
1. Name the core parts of a computer. Manually connect and configure external devices (i.e. Speakers, mouse, Microbit).	Skills taught in lesson(s):
2. Navigate Windows file systems; create, rename and organise files and folders.	1, 3
3. Use a full range of keyboard shortcuts (Ctrl+v, x, c, z, y, b, l, a).	1
4. Type accurately at a speed of 20 words per minute using two hands and correct home row positioning.	2
5. Navigate an internet browser, using back/refresh buttons, managing bookmarks, windows and multiple tabs.	2
6. Create advanced text documents using formatting tools, text boxes, images, tables and using proofreading tools.	2, 4, 5, 7, 9
7. Create a dynamic presentation using unified styles, lists, diagrams, slide transitions and animations.	6, 8, 10, 34
8. Create digital designs with precision using object grouping, custom layer fills and alignment tools.	33
9. Add data to a spreadsheet and use basic formulas (=SUM)	33
10. Generate graphs and tables to view and interpret data	29
Digital literacy, AI literacy and E-safety	30, 31
1. Explain some ICT rules beyond school, i.e. copyright, age limits.	Skills taught in lesson(s):
2. Explain the concept of a ‘digital footprint’ and its effects.	1, 26
3. Explain the effects of sharing personal information online.	24
4. Give clear examples of cyberbullying and articulate its emotional and legal consequences.	24
5. Describe how technology can be used in a healthy lifestyle.	25
6. Explain a procedure for reporting inappropriate content, contact and grooming online.	25
7. Critically assess the reliability, origin and trustworthiness of internet search results rather than clicking the first link.	27
8. Identify advanced generative AI tools and their effects in society. Explain how AI and machine learning works using algorithms.	28, 29
9. Identify issues relating to misuse of AI including bias, deepfake misinformation, and issued with how AI-generated text can confuse younger users	28, 29

Programming and computational thinking	Skills taught in lesson:
1. Explain the difference between ‘input’ and ‘output’; give algorithms for both and program inputs and outputs in physical devices and in on-screen environments.	14, 19, 20
2. Program precise movement using positive and negative values.	16, 18, 18
3. Use ‘wait’ commands in programs to improve results.	15,19
4. Use different types of loops, i.e. nested lops, repeat until loops.	14, 21
5. Use an ‘if, elif, else’ conditional structure; use nested conditions.	15, 19, 20
6. Create more than one variable for a program, program movement by a variable amount.	14, 15, 16
7. Independently decompose problems, look for repetition and debug.	15, 17, 18
8. Debug logically, based on behaviour. Identify sections of code that work.	14, 17, 18
9. Explain the components that make up a computer network and explain how data is transmitted across networks including the internet. Differentiate the internet from the world wide web.	22
10. Explain how search engines work and rank web pages (keywords, algorithms, paid ads), select reliable results.	23

GOAL 6 – DIGITAL LITERACY, E-SAFETY AND AI

Goal 6



DIGITAL LITERACY,
E-SAFETY AND AI

Lesson 24 – Digital footprint and online privacy	
Goal	Goal 2 – Digital literacy, safety and AI
Learning objective	We are learning to distinguish between personal and private data and that information we share online can create risks
UN Sustainable Development Goal	 SDG 16: Peace, Justice and Strong Institutions (Target 16.10: “Ensure public access to information and protect fundamental freedoms”) Teach children to transmit information via the internet safely
Success Criteria	• I can define my digital footprint and give examples of active and passive data • I can distinguish between personal data and private data • I can analyse an online profile scenario and predict its long-term consequences
Introduction	1. Permanent ink analogy: Draw a large footprint on a piece of paper at the front using permanent marker. Inside, write “comments”, “tags”, “photos”, “searches”, “location tags”. 2. Elicit why these things have been written in permanent marker. If you try to wipe them off, do they disappear? What else could we add to this list? 3. Explain that everything you do online is recorded, whether posting or visiting a website. Explain the difference between Active footprints – (things you post intentionally) and Passive footprints (things collected automatically like cookies and IP addresses).
Main lesson	Time: 35 minutes Step 1: Personal v private data sorting (15 minutes)

	• Provide students with eight examples of information. This can be written in a table son the whiteboard or printed out as cards for pairs. • Include: favourite colour, home address, first name, password, school name, pet’s name, current location, favourite computer game • Students work in pairs to sort these into two categories: personal (can share but be careful) and private (never share publicly). • Point put that even personal information can identify you or be used in many passwords Step 2: Profile scenario (The ‘Ripple’ effect’) (15 minutes) • Guide children through discission of scenarios relating to sharing of information. For example: • “Ben, age 12, posts a photo wearing his school uniform with a location tag in his local park. He gives his birthday in his bio” • Students discuss these three questions: 1) What personal information has Ben shared? 2) How could someone with bad intentions misuse this footprint? 3) How can Ben fix his profile settings to stay safe? Students could also come up with scenarios for other pairs to discuss. Step 3: Privacy checklist (15 minutes) • Pairs work together to create a 3-point privacy checklist, with three rules for protecting their information.
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Plenary	Time: 10 minutes • Ask the children to reflect on the information they share online. Do they need to adjust their behaviour? • Emphasise that it is important to ask an adult for help if we share information that we feel we should not have.
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Lesson 25 – Cyberbullying and reporting	
Goal	Goal 2 – Digital literacy, safety and AI
Learning objective	We are learning to identify forms of online harassment and to understand the emotional and legal consequences of cyberbullying
UN Sustainable Development Goal	 SDG 16: Peace, Justice and Strong Institutions (Target 16.2: “End abuse...and all forms of violence against children”) Recognise forms of cyberbullying as harmful behaviours
Success Criteria	• I can identify as least three types of cyberbullying (harassment, exclusion, outing, impersonation, flaming) • I can explain the emotional effects of cyberbullying • I can explain the legal consequences of cyberbullying • I can apply the stop, block, tell, report protocol in a scenario
Introduction	- Display two messages on the screen: • “Well done, you tried your best in the game today. Why don’t you practise your passing.” • “Nobody wants you on our team. Don’t show up to the next game, or else.” • What is the difference between criticism and harassment? Explain that cyberbullying involves intentional harm caused to someone else using technology and can be against the law.

Main lesson	Time: 35 minutes Step 1: Forms of cyberbullying (5 minutes) • Show children a list of different forms of cyberbullying. Discuss, or elicit their definitions. Include: • Harassment (contacting someone against their will, or sending insulting messages) • Flaming (using strong language against someone) • Outing (sharing someone's secrets or personal information. Could include embarrassing photos) • Impersonation (pretending to be someone else) • Exclusion (stopping someone from joining in activities) • Denigration – damaging someone's reputation by spreading rumours • Teach children the four step emergency protocol: - Stop (don't reply or retaliate) - Block (block the account or app) - Tell (tell a trusted adult) - Report (use in-app tools to report and/or save evidence) Step 2: Gathering evidence (10 minutes) • Ask students how we could gather evidence if someone is cyberbullying. • Elicit ways including taking a photograph, using the Snipping Tool, using the screenshot tool on a phone or tablet. • Emphasise that we record evidence to show an adult, not to further share online.
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	• Demonstrate using these tools and ensure all children know how to use them. Step 3: Scenario practice (15 minutes) • Give children three cyberbullying situations. For each, ask them to decide what kind of cyberbullying has taken place and what the victim's next steps should be. Paired discussion and class feedback.
Plenary	Time: 10 minutes - Ask the children if they think that cyberbullying is more or less hurtful than other forms of bullying. (Often more hurtful, as the comments and content are permanent or difficult to erase) - Ask them to consider how they can ensure they don't cyberbully someone without thinking.

Lesson 26 – Permissions and copyright	
Goal	Goal 2 – Digital literacy, safety and AI
Learning objective	We are learning to understand digital copyright rules and Creative Commons
UN Sustainable Development Goal	 SDG 16: Peace, Justice and Strong Institutions (Target 16.3: “Promote the rule of law at the national and international levels”) Recognise the rights of digital content creators
Success Criteria	• I can explain that most content created on the internet was created by humans and is owned by someone • I can check to see if someone has given permission to reuse their work • I can use information from repositories such as Pixabay and Wikipedia and check permissions, including Creative Commons
Introduction	• Show the children a photograph taken by a professional photographer. Ask them what they like about the photograph. Ask what was involved in taking the photograph. • Explain that for some people, taking photographs, writing, or making digital content is how they earn their living. • Just like we would not steal physical things, it is wrong to steal digital content or use someone’s content without their permission. • One of the most amazing things about the internet is the ability to share, and in many cases, we can use things that people have put on the internet, but we need permission.
Main lesson	Time: 35 minutes

	Step 1: Exploring image searches (10 minutes) • Model searching for an image using Google images. • Point out to the children that most if the images have not given permission to use them. • Model searching for an image using Pixabay. Point out the difference between sponsored and non-sponsored images. • Point out Pixabay’s content licence, which gives permission to use images there. • Model a search using Wikipedia. Point out the Creative Commons licence to children and talk about what this means. Step 2: Image gathering practice (25 minutes) • Write a list of things on the board for children to find an image of. This could be a list of famous places, foods, animals or other things. • Model performing a search, checking image permissions and copying and pasting the image into a new Word Document. • For each image, say what it is as a caption under the image and the source. • Children gather images fir their own document, also practising their copying and pasting skills and formatting skills. • Remind children that they can gather images from Wikipedia or Pixabay but should not generally use Google Images.
Plenary	Time: 10 minutes • Ask the children to share the images that they found and their tips for searching. • Remind children that one day they might create their own digital content and would want someone to have their permission before using it!

Lesson 27 – Healthy technology use	
Goal	Goal 2 – Digital literacy, safety and AI
Learning objective	We are learning to describe the physical and psychological consequences of technology overuse and create a personal digital wellbeing routine.
UN Sustainable Development Goal	 SDG 2: Good Health and Well-being (Target 3.4 Promote mental health and well-being) Promote mental health and well-being as essential aspects of a healthy life
Success Criteria	• I can identify features of apps that keep us playing or scrolling • I can explain how excessive screen time can have physical effects (i.e. posture, body strength) • I can explain the psychological effects if excessive use of technology • I can draft a mental wellbeing plan
Introduction	1. Show images of common features of apps (red notification badges, infinite scrolling, auto play videos, daily streaks). What do all of these things have in common? (they encourage us to use the apps more) 2. Ask, why do apps use red notifications instead of grey ones? Why is infinite scroll used? 3. Explain persuasive design, as a strategy that is used by companies to trigger dopamine hits and maximise screen time. Ask the children if they can think of any other tools that are designed to trigger dopamine. (they may include sounds in apps)
Main lesson	Time: 35 minutes Step 1: Exploring effects on the body (10 minutes)

	• Discuss the effects that misuse of technology can have on the physical body. Include discussion of blue light interrupting sleep, posture/strain, lack of exercise, • Discuss the mental/psychological effects that too much technology can have. Include self esteem issues, dopamine addiction, compulsive behaviour such as “doomscrolling”, effects on our mood. • Discuss how technology can also have positive affects in our health, such as step counters, educational games, global communication. Step 2: Physical and mental health audit (5 minutes) • Guide children through completing an audit of their own technology use. • Display the following statements on the board and ask children to open a new spreadsheet using Excel and write numbers 1 – 10 in column B and a score from 0-3 in the corresponding cell in column C. (0=never, 1 = sometimes 2 = often 3 = every day) • Include statements such as: - <i>I check my phone at night before I go to bed</i> - <i>I play games for more than an hour per day</i> - <i>I ‘doomscroll’ through news stories or videos</i> - I constantly check notifications - I feel tired after using technology - I use technology instead of playing physical games Step 3: Digital wellbeing score (10 minutes) • At the bottom of column C, children type in the formula: =sum (C1:C). This will total all of the scores out of 3. • Decide on a score to aim for as a class.
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	• Ask students to write a sentence at the bottom of their spreadsheet with a way that they are going to try to improve their score.
Plenary	Time: 10 minutes • Discuss with the class how most technology is not inherently bad or good; it is about how we sue it and ensuring that we make the choice. • Ensure children save their work and shut down their computers.

Lesson 28 – How AI works	
Goal	Goal 2 – Digital literacy, safety and AI
Learning objective	<i>Teachers should use careful judgement when talking about AI with children. Children are too young to use most generative AI tools.</i> We are learning to understand machine learning by learning about how the outputs of AI tools depends on how they are trained
UN Sustainable Development Goal	 SDG 2: Good Health and Well-being (Target 3.4 Promote mental health and well being) Ensure that children use digital tools without being confused by their behaviour
Success Criteria	- I can explain the difference between traditional rule-based coding and machine learning - I can train an AI model using Code.org's AI for Oceans and evaluating its accuracy https://studio.code.org/courses/oceans/units/1/lessons/1/levels/1 - I can explain how incomplete training or biased data causes an AI model to make mistakes
Introduction	1. Ask the children which AI tools they have heard of or used. 2. Remind the children that even search engines use AI, as do many games (chess games for example). 3. Ask the children if they think AI tools use an algorithm, like: 'if x then do y, otherwise do z?' (No, this would not raise enough possibilities) 4. Explain that instead of this traditional code, AI uses machine learning, where it studies 1000s of examples and 'learns' what a fish looks like. 5.

Main lesson	Time: 35 minutes Step 1: Code.org activity (30 minutes) • Show students how to navigate to code.org and access the AI for Oceans activity https://studio.code.org/courses/oceans/units/1/lessons/1/levels/1 • Instruct students to complete the activity where they train the ocean cleaner and then use it to clean the ocean. • Discuss the results with the children. If the cleaner makes mistakes, is it the cleaner's fault? (no, it is the fault of the people who trained the cleaner). • Students complete the next activity where they train the AI on a subjective word (i.e. friendly, cute). • Discuss how the human's opinions get coded into the AI behaviour. Discuss what problems this could cause and explain that this is called 'bias'. Step 2: Large language models (LLMs) (5 minutes) • Write a sentence on the board, such as 'The capital city of Nepal is...' • Explain that AI tools like Chat GPT work by reading millions of pages on the internet and predicting which word will come next.
Plenary	Time: 10 minutes • Ask the children what we have learned about how AI works. • Remind them that although AI is a computer tool, it is trained by people and can reflect the views of the people that train it. • Remind children of the rules and age limits of AI tools, that they should not be using most AI tools as children.

Lesson 29 – AI misuse, bias, deepfakes & ethics	
Goal	Goal 2 – Digital literacy, safety and AI
Learning objective	<i>Teachers should use careful judgement when talking about AI with children. Children are too young to use most generative AI tools.</i> We are learning to describe the risks of using AI tools, including bias, AI hallucinations, cognitive offloading and synthetic media (deepfakes)
UN Sustainable Development Goal	 SDG 16: Peace, Justice and Strong Institutions (Target 16.10: Ensure public access to information and protect fundamental freedoms) Avoiding disinformation which undermines public trust, free elections and social stability
Success Criteria	• I can spot clues of AI generated images • I can describe AI hallucinations and talk about how these can cause problems • I can talk about how AI can be confusing for young people • I can explain how using AI can stop people from thinking for themselves and talk about the problems of this
Introduction	• Show the children two images on the board, one that is real and one that has been generated with AI. • Discuss why AI images are used and why they can cause problems. Include discussion of: - Staling someone's image - Cyberbullying - Creating AI generated artwork • Explain that AI tools can generate human faces (deepfakes) and be confident about false facts (hallucinations). Explain that these happen because AI tools predict what looks correct, so critical

	evaluation is essential. Ask if children have had any experience of this.
Main lesson	Time: 35 minutes Step 1: AI content recognition (15 minutes) • Show the children some examples of AI generated images next to real images. Ask the children to see if they can choose the real image. Play this for 5 – 10 rounds. Step 2: Hallucination examples (15 minutes) • Guide children through examining some examples of hallucinations generated by AI tools. • Explore the implications of these and emphasise that we should always check sources. • Model the process of using a search engine and navigating past the AI generated results. Step 3: Conduct and rule reminder (5 minutes) • Remind children that under the terms of most AI tools, you have to be over 13 years to use them supervised, and over 18 years to use them unsupervised. Discuss why this is, base don the things we have talked about in this lesson.
Plenary	Time: 10 minutes • Congratulate the children on reaching the end of this E-safety and AI literacy topic. • Emphasise that they need to try to make good decisions when using technology but most importantly ask adults to help if they are not sure.

Teaching objectives covered in this unit

(Highlighted skills are taught in one of the lessons for this development goal)

Intermediate level (age 10 – 12) – teacher assessment of children	
ICT Skills	Skills taught in lesson(s):
1. Name the core parts of a computer. Manually connect and configure external devices (i.e. Speakers, mouse, Microbit).	1, 3
2. Navigate Windows file systems; create, rename and organise files and folders.	1
3. Use a full range of keyboard shortcuts (Ctrl+v, x, c, z, y, b, l, a).	2
4. Type accurately at a speed of 20 words per minute using two hands and correct home row positioning.	2
5. Navigate an internet browser, using back/refresh buttons, managing bookmarks, windows and multiple tabs.	2, 4, 5, 7, 9
6. Create advanced text documents using formatting tools, text boxes, images, tables and using proofreading tools.	6, 8, 10, 34
7. Create a dynamic presentation using unified styles, lists, diagrams, slide transitions and animations.	33
8. Create digital designs with precision using object grouping, custom layer fills and alignment tools.	33
9. Add data to a spreadsheet and use basic formulas (=SUM)	29
10. Generate graphs and tables to view and interpret data	30, 31
Digital literacy, AI literacy and E-safety	Skills taught in lesson(s):
1. Explain some ICT rules beyond school, i.e. copyright, age limits.	1, 26
2. Explain the concept of a 'digital footprint' and its effects.	24
3. Explain the effects of sharing personal information online.	24
4. Give clear examples of cyberbullying and articulate its emotional and legal consequences.	25
5. Describe how technology can be used in a healthy lifestyle.	25
6. Explain a procedure for reporting inappropriate content, contact and grooming online.	27
7. Critically assess the reliability, origin and trustworthiness of internet search results rather than clicking the first link.	28, 29
8. Identify advanced generative AI tools and their effects in society. Explain how AI and machine learning works using algorithms.	28, 29
9. Identify issues relating to misuse of AI including bias, deepfake misinformation, and issued with how AI-generated text can confuse younger users	28, 29

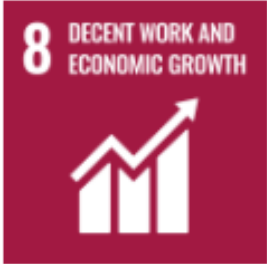
Programming and computational thinking	Skills taught in lesson:
1. Explain the difference between ‘input’ and ‘output’; give algorithms for both and program inputs and outputs in physical devices and in on-screen environments.	14, 19, 20
2. Program precise movement using positive and negative values.	16, 18, 18
3. Use ‘wait’ commands in programs to improve results.	15,19
4. Use different types of loops, i.e. nested lops, repeat until loops.	14, 21
5. Use an ‘if, elif, else’ conditional structure; use nested conditions.	15, 19, 20
6. Create more than one variable for a program, program movement by a variable amount.	14, 15, 16
7. Independently decompose problems, look for repetition and debug.	15, 17, 18
8. Debug logically, based on behaviour. Identify sections of code that work.	14, 17, 18
9. Explain the components that make up a computer network and explain how data is transmitted across networks including the internet. Differentiate the internet from the world wide web.	22
10. Explain how search engines work and rank web pages (keywords, algorithms, paid ads), select reliable results.	23

GOAL 7 – AGRICULTURAL FINANCIAL LITERACY

Goal 7



AGRICULTURAL FINANCIAL LITERACY

Lesson 30 – Calculating using a spreadsheet	
Goal	Goal 6 – Agricultural financial literacy
Learning objective	We are learning to use Libre Office Calc to build a spreadsheet using the SUM() formula
UN Sustainable Development Goal	 SDG 8: Decent work and Economic Growth (Target 8.10: Strengthen the capacity of domestic financial institutions...expand access to banking, insurance and financial services for all) Constructing a digital system to assist with finances relating to planting and harvesting
Success Criteria	• I can launch Libre Office Calc to build a new spreadsheet • I can input data into cell coordinates (A1, B1 etc.) • I can type an automated formula (i.e. =SUM A1:A8) to calculate costs
Introduction	Time: 15 minutes 1. Write a list of 20 different large numbers representing seed bags and tools purchased on the whiteboard. Ask the children to add these up in their heads (this will be hard!) 2. Explain that a spreadsheet is a calculator that we can customise. As we change quantities, the spreadsheet will update automatically.
Main lesson	Time: 35 minutes Step 1: Launching Libre Office Calc (5 mins) • Instruct children to open Libre Office Calc on their desktop screen. Step 2: Modelling setting up a spreadsheet (15 mins)

	• Point out the grid lines and how these relate to coordinates of cells. • Model writing titles into cells A1 and B1. A1 should be “Crop name”, B1 should be “Seed cost” • In A2, type “Rice seeds”, in A3, type “Maize seeds”, in A4, type “Tomato seeds” • In cell B2 to B4, input prices • In cell A5 type total expense • Demonstrate entering the formula into cell B5, =SUM A1:A8 • Model changing the process and seeing the total change! Step 3: Creating spreadsheets (15 mins) • Children repeat the steps to create their own spreadsheets. • Encourage children to add further rows for more crop types and to change the prices.
Plenary	Time: 15 minutes 1. Discuss the benefits of spreadsheets and other amounts that we could input into them 2. Instruct children to save their work and shut down their computers safely.

Lesson 31 – Creating graphs using a spreadsheet	
Goal	Goal 6 – Agricultural financial literacy
Learning objective	We are learning to generate a bar graph to help us analyse data that we have inputted into a spreadsheet
UN Sustainable Development Goal	 SDG 4: Quality Education (Target 4.6: ...A substantial proportion of adults...achieve literacy and numeracy) Learning to use computers to perform accurate calculations
Success Criteria	• I can launch Libe Office Calc (or Excel) and open the spreadsheet that I created last lesson • I can highlight the table I have inputted data into • I can find the 'Insert' tab and insert an appropriate chart • I can explain why some charts are more appropriate than others • I can change the title of the chart and the column titles • I can write a conclusion form looking at my chart
Introduction	Time: 15 minutes 1. Remind the children of the work that we did last lesson in setting up a spreadsheet. Remind children why we use spreadsheets (a clear way to organise data and powerful calculation tools) 2. Show the children a comparison of data on a table and data on a graph. Ask what the benefits of both are. 3. Explain that in this lesson, we are going to learn about another powerful tool in a spreadsheet – the ability to make a graph!

Main lesson	Time: 35 minutes Step 1: Launching Libre Office Calc (5 mins) • Instruct children to open Libe Office Calc on their desktop screen. Ask them to load the spreadsheets that they made last lesson. Step 2: Generating a graph from a table in a spreadsheet (10 mins) • Model selecting the table that we inputted data into last lesson. • Model navigating to the Tools tab at the top of the screen and selecting an appropriate graph. A cluster bar chart is probably the most appropriate. A pie chart could form a useful comparison. • Ask children to follow these steps and generate their own graphs. Step 3: Customising graphs (15 mins) • Show children how to change the title and axis titles of the graph by double clicking on them. • In Excel, they have to click on the graph and turn on axis titles. • Show children how to change the colour of the graph, make the bars 3D and change other aspects of its appearance. • As a class, discuss what the graph shows, Model writing an appropriate caption underneath the graph. Ask children to do the same. Step 4: Exploring other graphs (10 mins) • Encourage children to experiment with other types of graphs (i.e. pie charts). • For each graph that they add, encourage children to writing an appropriate caption saying what the graph shows.
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Plenary	Time: 15 minutes • Ask the children whether they think that adding graphs made their data easier to read. • Discuss why some types of graphs were more appropriate. • Ensure that children save their work and log off their computers.
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Teaching objectives covered in this unit

(Highlighted skills are taught in one of the lessons for this development goal)

Intermediate level (age 10 – 12) – teacher assessment of children	
ICT Skills	Skills taught in lesson(s):
1. Name the core parts of a computer. Manually connect and configure external devices (i.e. Speakers, mouse, Microbit).	1, 3
2. Navigate Windows file systems; create, rename and organise files and folders.	1
3. Use a full range of keyboard shortcuts (Ctrl+v, x, c, z, y, b, l, a).	2
4. Type accurately at a speed of 20 words per minute using two hands and correct home row positioning.	2
5. Navigate an internet browser, using back/refresh buttons, managing bookmarks, windows and multiple tabs.	2, 4, 5, 7, 9
6. Create advanced text documents using formatting tools, text boxes, images, tables and using proofreading tools.	6, 8, 10, 34
7. Create a dynamic presentation using unified styles, lists, diagrams, slide transitions and animations.	33
8. Create digital designs with precision using object grouping, custom layer fills and alignment tools.	33
9. Add data to a spreadsheet and use basic formulas (=SUM)	29
10. Generate graphs and tables to view and interpret data	30, 31
Digital literacy, AI literacy and E-safety	Skills taught in lesson(s):
1. Explain some ICT rules beyond school, i.e. copyright, age limits.	1, 26
2. Explain the concept of a 'digital footprint' and its effects.	24
3. Explain the effects of sharing personal information online.	24
4. Give clear examples of cyberbullying and articulate its emotional and legal consequences.	25
5. Describe how technology can be used in a healthy lifestyle.	25
6. Explain a procedure for reporting inappropriate content, contact and grooming online.	27
7. Critically assess the reliability, origin and trustworthiness of internet search results rather than clicking the first link.	28, 29
8. Identify advanced generative AI tools and their effects in society. Explain how AI and machine learning works using algorithms.	28, 29
9. Identify issues relating to misuse of AI including bias, deepfake misinformation, and issued with how AI-generated text can confuse younger users	28,29

Programming and computational thinking	Skills taught in lesson:
1. Explain the difference between ‘input’ and ‘output’; give algorithms for both and program inputs and outputs in physical devices and in on-screen environments.	14, 19, 20
2. Program precise movement using positive and negative values.	16, 18, 18
3. Use ‘wait’ commands in programs to improve results.	15,19
4. Use different types of loops, i.e. nested lops, repeat until loops.	14, 21
5. Use an ‘if, elif, else’ conditional structure; use nested conditions.	15, 19, 20
6. Create more than one variable for a program, program movement by a variable amount.	14, 15, 16
7. Independently decompose problems, look for repetition and debug.	15, 17, 18
8. Debug logically, based on behaviour. Identify sections of code that work.	14, 17, 18
9. Explain the components that make up a computer network and explain how data is transmitted across networks including the internet. Differentiate the internet from the world wide web.	22
10. Explain how search engines work and rank web pages (keywords, algorithms, paid ads), select reliable results.	23

GOAL 8 – AGRICULTURAL SCIENCE

Goal 8



AGRICULTURAL SCIENCE

Lesson 32 – Research using E-Pustakalaya	
Goal	Goal 4 – Agricultural science (via E-Pustakalaya)
Learning objective	We are learning to search digital libraries using specific, multi-word search queries to research and compare pest control methods for regional crops
UN Sustainable Development Goal	 SDG 2: Zero Hunger (Target 2.3: Double agricultural productivity...through resources, inputs, knowledge, financial services) Improve growth of crops by providing suitable plant nutrition
Success Criteria	• I can use precise search operators (e.g. “organic pest control”) • I can download a technical agriculture guide form E-Pustakalaya • I can construct a table in Libre Office Writer
Introduction	Time: 15 minutes 1. Show the children a picture of a plant affected by insects. Ask how this could be addressed without applying toxic chemicals 2. Explain that farmers around the world have already addressed this problem and shared how this can be addressed naturally 3. Explain that this lesson, we are ging to learn to search agricultural knowledge from a library
Main lesson	Time: 35 minutes Step 1: Exploring search techniques (10 mins) • Show the children how to access these websites either through the browser or via the shortcuts on their desktops

	• Demonstrate how searching for generic terms like “bugs” gives bad results • Show children how searching with more specific terms like “Organic pest control” gives better results, but that we should not be too specific. Step 2: Accessing E-Pustakalaya or Wikipedia (5 mins) 1. Instruct children to open either E-Pustakalaya or Wikipedia. 2. Supervise children as they start their searches for documents and information relating to organic pest control 3. From E- Pustakalaya, children can download guides to their laptops Step 3: Creating comparison documents (15 mins) 1. Instruct children to open a new document using Libre Office Writer. 2. Model creating a comparison table with appropriate headings 3. Columns could have the titles: ‘Remedy name’ and ‘details’
Plenary	Time: 10 minutes 1. Ask the class “If you search for ‘bugs’ vs ‘organic cabbage pests’, why does the second result help you more quickly?” (Because it is more specific and points directly to solutions.) 2. Celebrate children’s success this lesson. 3. Ask children to save their work and shutdown their laptops

Teaching objectives covered in this unit

(Highlighted skills are taught in one of the lessons for this development goal)

Intermediate level (age 10 – 12) – teacher assessment of children	
ICT Skills	Skills taught in lesson(s):
1. Name the core parts of a computer. Manually connect and configure external devices (i.e. Speakers, mouse, Microbit).	1, 3
2. Navigate Windows file systems; create, rename and organise files and folders.	1
3. Use a full range of keyboard shortcuts (Ctrl+v, x, c, z, y, b, l, a).	2
4. Type accurately at a speed of 20 words per minute using two hands and correct home row positioning.	2
5. Navigate an internet browser, using back/refresh buttons, managing bookmarks, windows and multiple tabs.	2, 4, 5, 7, 9
6. Create advanced text documents using formatting tools, text boxes, images, tables and using proofreading tools.	6, 8, 10, 34
7. Create a dynamic presentation using unified styles, lists, diagrams, slide transitions and animations.	33
8. Create digital designs with precision using object grouping, custom layer fills and alignment tools.	33
9. Add data to a spreadsheet and use basic formulas (=SUM)	29
10. Generate graphs and tables to view and interpret data	30, 31
Digital literacy, AI literacy and E-safety	Skills taught in lesson(s):
1. Explain some ICT rules beyond school, i.e. copyright, age limits.	1, 26
2. Explain the concept of a 'digital footprint' and its effects.	24
3. Explain the effects of sharing personal information online.	24
4. Give clear examples of cyberbullying and articulate its emotional and legal consequences.	25
5. Describe how technology can be used in a healthy lifestyle.	25
6. Explain a procedure for reporting inappropriate content, contact and grooming online.	27
7. Critically assess the reliability, origin and trustworthiness of internet search results rather than clicking the first link.	28, 29
8. Identify advanced generative AI tools and their effects in society. Explain how AI and machine learning works using algorithms.	28, 29
9. Identify issues relating to misuse of AI including bias, deepfake misinformation, and issued with how AI-generated text can confuse younger users	28,29

Programming and computational thinking	Skills taught in lesson:
1. Explain the difference between ‘input’ and ‘output’; give algorithms for both and program inputs and outputs in physical devices and in on-screen environments.	14, 19, 20
2. Program precise movement using positive and negative values.	16, 18, 18
3. Use ‘wait’ commands in programs to improve results.	15,19
4. Use different types of loops, i.e. nested lops, repeat until loops.	14, 21
5. Use an ‘if, elif, else’ conditional structure; use nested conditions.	15, 19, 20
6. Create more than one variable for a program, program movement by a variable amount.	14, 15, 16
7. Independently decompose problems, look for repetition and debug.	15, 17, 18
8. Debug logically, based on behaviour. Identify sections of code that work.	14, 17, 18
9. Explain the components that make up a computer network and explain how data is transmitted across networks including the internet. Differentiate the internet from the world wide web.	22
10. Explain how search engines work and rank web pages (keywords, algorithms, paid ads), select reliable results.	23

GOAL 9 – MODERN MARKETING AND BUSINESS

Goal 9



MODERN MARKETING AND BUSINESS

Lesson 33 – Creating a header and logo	
Goal	Goal 9 – Modern marketing and community agribusiness
Learning objective	We are learning to follow design rules to create a visual design that is clear, consistent and serves a purpose
UN Sustainable Development Goal	 SDG 4: Quality Education (Target 4.4: ...Substantially increase the number of youth who have relevant skills...) Combining digital tools to present ideas
Success Criteria	• I can explain why design consistency (colour, font, layout) builds trust in a product • I can pair a strong headline font with a readable body font • Can design a clean text and shape logo header for my business
Introduction	Time: 15 minutes 1. Show the students two brand examples: a messy hand-written sign vs. a clean, cohesive farm brand header. 2. Ask the children, which looks more attractive to a wholesale buyer? 3. Introduce the three golden design rules: Contrast, Alignment and Consistency
Main lesson	Time: 35 minutes Step 1: Document setup (5 mins) • Model setting up a document in Libre Office Writer (or Word). • Set the margins to 1.5mm (narrow).

	Step 2: Header and Logo creation (10 mins) • Guide the children to type their farm name at the top of the document. (i.e. “<i>Himalayan Organics</i>”) • Select the text, format the header to bold, 28pt and apply a custom dark green, or brown palette. Step 3: Logo integration (15 mins) • Instruct the children to select a simple vector shape (e.g. a leaf or mountain symbol) next to the header using ‘insert’ → ‘shape.’ • Encourage the children to experiment with different fill colours and borders for their logo, but to pay attention to the consistency rule of design. • Students choose a different font for their body text, setting the text size to 14pt. • Students type a sentence about an imaginary product for their business. Step 4: Peer assessment (5 mins) • Children show the whole page on their screens. • Children view and comment on each other’s work.
Plenary	Time: 10 minutes 1. Ask the class: “Why does following clear and consistent design rules make a product information sheet more attractive to a buyer?” 2. Ensure children save their work for next lesson and log off their computers.

Lesson 34 – Creating the text for a flyer	
Goal	Goal 9 – Modern marketing and community agribusiness
Learning objective	We are learning to design a professional, multi-column crop advertisement flyer, featuring page margins, customised text hierarchy and a 2-column product information table.
UN Sustainable Development Goal	SDG 4: Quality Education (Target 4.4: ...Substantially increase the number of youth who have relevant skills...) Combining digital tools to present ideas
Success Criteria	• I can use page margin controls to format a vertical page layout • I can insert and format a 2-column table, detailing crop highlights • I can customise fonts, sizes and colours to make product headers stand out to potential buyers
Introduction	Time: 15 minutes 1. Show the students a poorly formatted, messy printed list of crops versus a clean, beautifully formatted restaurant menu or catalogue sheet. What are the differences? 2. Explain the rules of design, including clean presentation, which shows pride and quality. 3. Introduce the task, today we are making product catalogues for your farm's harvest.
Main lesson	Time: 35 minutes Step 1: Document setup and borders (5 mins)

	• Direct students to open a new document in Libre Office Writer. Show them how to set up the page borders of the document. Step 2: Header styling (10 mins) • Guide the children to type their farm name at the top of the document. • Select the text, make it centred, increase the font size, choose a font type and green colour and make it bold (Ctrl + B) Step 3: Product details (15 mins) • Instruct the children to add a 2 x 4 table beneath their header. • Populate the table rows with marketing details to attract wholesale buyers • Crop variety: Organic Mountain Ginger • Available Volume: 500 kilograms • Key features: Hand harvested, pesticide free, sun dried • Contact info: Local Village • Teach children which parts of the table to bold and colour cells, to emphasise titles. Step 4: Peer assessment (5 mins) • Children show the whole page on their screens. • Children view and comment on each other's work.
Plenary	Time: 10 minutes 1. Ask the class: "Why does putting product details inside a clean table make it easier for a buyer?" (Because it breaks the key information into easy-to-read sections) 2. Children save their work and close the computers safely.

Lesson 35 – Adding and formatting images	
Goal	Goal 9 – Modern marketing and business
Learning objective	We are learning to import, crop and wrap high-resolution product imagery into document layouts without breaking text flow.
UN Sustainable Development Goal	 SDG 4: Quality Education (Target 4.4: ...Substantially increase the number of youth who have relevant skills...) Combining digital tools to present ideas
Success Criteria	• I can search for an image form a site such as Wikipedia or Pixabay • I can copy and paste this image into my document • I can resize the image to maintain the original ratio (no stretching) • I can set text wrapping (Wrap text → square/optimal) to that text flows neatly around photos • I can add drop shadows or borders to visual assets
Introduction	1. Show an example of a document flyer about a product that contains a photo. 2. What do the children notice about the photo? 3. Encourage them to consider size, alignment, borders etc.
Main lesson	Time: 35 minutes Step 1: Photo sourcing (10 minutes) • Ask students to open their document from last lesson • Ask students to navigate to Pixabay.com and search for an image similar to their product. Discuss effective searching using keywords.

	• Model copying and pasting the image form Pixabay into their document. Step 2: Photo integration and resizing (15 minutes) • Guide children through the steps of resizing their document using the pointer in the corner of their image. Model the difference between this and stretching the image by clicking on the side markers. • Model the steps of changing the text wrapping to that the text flows around the photograph. • Model the steps of adding an image border to the image. • Model adding other effects, including image shadow. Step 3: Layout adjustment (10 minutes) • Ask the children to ensure that their product information page fits onto one side of A4, so that it does not spill over onto the next page.
Plenary	Time: 10 minutes • Ask the children to peer-assess each other's product pages and comment on the things that would make them want to buy this product. • Ensure that children save their work and log off their computers.

Lesson 36 – Creating a presentation	
Goal	Goal 9 – Modern marketing and business
Learning objective	We are learning to turn printed advertisements into an interactive slide presentation
UN Sustainable Development Goal	 SDG 4: Quality Education (Target 4.4: ...Substantially increase the number of youth who have relevant skills...) Combining digital tools to present ideas
Success Criteria	• I can convert written flyer text into short bullet points • I can apply a consistent slide master background and matching farm brand colours • I can insert custom layout slides • I can insert my logo at appropriate points
Introduction	1. Explain the difference between a flyer and a slideshow presentation: People will sit and read a whole flyer, but don't want to read lots of text while someone is talking! 2. Emphasise that the key rule is no long paragraphs on slides. 3. Show an example of a good presentation about a product. Discuss what makes it successful (consistent colour, clear titles, logo present etc.)
Main lesson	Time: 35 minutes Step 1: Software launch and setup (5 minutes) • Ask students to open their flyers from the last few lessons as a reference • Show children how to open PowerPoint (or Libre Office Impress) and create a new presentation. Step 2: Slide setup (5 minutes)

	• Guide children through adding an opening slide and adding their Agribusiness name, logo and a tagline, (i.e. <i>“Quality produce form local hills”</i>) Step 3: Adding information to slides (15 minutes) • Guide children through the process of adding information from their flyers to their slides. • Show them how to add a title, add bullet points on the left side of their slides (i.e. Pesticide-free, hand harvested, bult-ready) and insert a photo onto the right side of their slide. • Show children how to add a table with information about their products, including volume, pricing and contact information. Step 4: Transitions (5minutes) • Ask students to add simple, non-distracting slide transitions (i.e. Wipe or dissolve, under 1 second)
Plenary	Time: 10 minutes • Explain to the children that in the next lesson, they will be doing a business presentation of their product to their peers. • Ask them what they think makes a good business presentation.

Lesson 37 – Business presentation	
Goal	Goal 9 – Modern marketing and business
Learning objective	We are learning to use presentational software to deliver a marketing proposal to peers, including the distribution of printed product sheets
UN Sustainable Development Goal	 SDG 4: Quality Education (Target 4.4: ...Substantially increase the number of youth who have relevant skills...) Developing oracy and presentation skills
Success Criteria	• I can deliver a 2-minute business pitch using presentation slides effectively. • I can save as a PDF, print out and distribute my product sheet • I can answer questions about product details using data from my flyer table • I can evaluate peer presentations using a structured design rubric.
Introduction	1. Set up the room like a “Wholesale trade fair”. 2. Half the class acts like Agribusiness presenters, the other half acts as Wholesale buyers (swap roles halfway through). 3. (Ensure that prior to, or in this lesson, students have saved their flyers as a PDF and have printed these).
Main lesson	Time: 35 minutes Step 1: Presentation brief and setup (10 minutes) • Ask students to open the Typing.com website via the shortcut on

	Step 2: Trade fair presentations and peer evaluation (35 minutes) • Pitching (2 minutes per student) Presenters display their PowerPoint or Impress slides on the class screen, while holding or handing out their printed PDF flyer. • Buyer interaction: The buyers ask 2 questions (i.e. “What is your total bulk volume?” “How is the crop processed?”) • Rubric assessment: Buyers score the presenter out of 5 across the three criteria: 1. Visual layout clarity (How easy to read?) 2. Information completeness (Price, volume, contact info?) 3. Professional delivery (confident pitch?)
Plenary	Time: 10 minutes • Ask the children how the skills we have learned in this unit help local farmers to sell their products for higher process in real life. • Emphasise that these skills are used across all industries, not just in farming.

Teaching objectives covered in this unit

(Highlighted skills are taught in one of the lessons for this development goal)

Intermediate level (age 10 – 12) – teacher assessment of children	
ICT Skills	Skills taught in lesson(s):
1. Name the core parts of a computer. Manually connect and configure external devices (i.e. Speakers, mouse, Microbit).	1, 3
2. Navigate Windows file systems; create, rename and organise files and folders.	1
3. Use a full range of keyboard shortcuts (Ctrl+v, x, c, z, y, b, l, a).	2
4. Type accurately at a speed of 20 words per minute using two hands and correct home row positioning.	2
5. Navigate an internet browser, using back/refresh buttons, managing bookmarks, windows and multiple tabs.	2, 4, 5, 7, 9
6. Create advanced text documents using formatting tools, text boxes, images, tables and using proofreading tools.	6, 8, 10, 34
7. Create a dynamic presentation using unified styles, lists, diagrams, slide transitions and animations.	33
8. Create digital designs with precision using object grouping, custom layer fills and alignment tools.	33
9. Add data to a spreadsheet and use basic formulas (=SUM)	29
10. Generate graphs and tables to view and interpret data	30, 31
Digital literacy, AI literacy and E-safety	Skills taught in lesson(s):
1. Explain some ICT rules beyond school, i.e. copyright, age limits.	1, 26
2. Explain the concept of a 'digital footprint' and its effects.	24
3. Explain the effects of sharing personal information online.	24
4. Give clear examples of cyberbullying and articulate its emotional and legal consequences.	25
5. Describe how technology can be used in a healthy lifestyle.	25
6. Explain a procedure for reporting inappropriate content, contact and grooming online.	27
7. Critically assess the reliability, origin and trustworthiness of internet search results rather than clicking the first link.	28, 29
8. Identify advanced generative AI tools and their effects in society. Explain how AI and machine learning works using algorithms.	28, 29
9. Identify issues relating to misuse of AI including bias, deepfake misinformation, and issued with how AI-generated text can confuse younger users	28,29

Programming and computational thinking	Skills taught in lesson(s):
1. Explain the difference between ‘input’ and ‘output’; give algorithms for both and program inputs and outputs in physical devices and in on-screen environments.	14, 19, 20
2. Program precise movement using positive and negative values.	16, 18, 18
3. Use ‘wait’ commands in programs to improve results.	15,19
4. Use different types of loops, i.e. nested lops, repeat until loops.	14, 21
5. Use an ‘if, elif, else’ conditional structure; use nested conditions.	15, 19, 20
6. Create more than one variable for a program, program movement by a variable amount.	14, 15, 16
7. Independently decompose problems, look for repetition and debug.	15, 17, 18
8. Debug logically, based on behaviour. Identify sections of code that work.	14, 17, 18
9. Explain the components that make up a computer network and explain how data is transmitted across networks including the internet. Differentiate the internet from the world wide web.	22
10. Explain how search engines work and rank web pages (keywords, algorithms, paid ads), select reliable results.	23

REFERENCES AND ACKNOWLEDGEMENTS

This scheme of work references third-party interactive educational software, applications, platforms and media resources:

Productivity, Graphics design and desktop software

- **LibreOffice** (The Document Foundation) – Free and open-source office suite used under the Mozilla Public Licence v2.0 (MPLv2).
- **Microsoft Word, PowerPoint, Excel** (Microsoft Corporation) – Referenced for word processing, presentation creation and spreadsheet creation instruction

Coding, AI and Physical Computing

- **Code.org (AI for Oceans)** – Used under Code.org’s free educational terms
- **Microsoft MakeCode** (Microsoft Corporation) – Used under Microsoft’s free educational terms
Microsoft makecode screenshots used with permission from Microsoft Corporation. Interface images © Microsoft. Microsoft and makecode are trademarks of the Microsoft group of companies.
- **Micro:bit Python Editor** (Microbit Educational Foundation) – Used for educational coding under the Micro:bit Educational Foundation terms
- BBC Microbit Python Editor screenshots used courtesy if the Micro:bit Educational Foundation (microbit.org). Micropython is licenced under the MIT licence. ‘Python’ is a registered trademark of the Python Software foundation.
- **Mu** (Code with Mu) – Free, open-source Python IDE used under the GNU General Public Licence v3 (GPLv3).
- **Scratch** (MIT Media lab) – Used under MIT’s free educational terms and Creative Commons Attribution-ShareAlike 2.0 licence

Scratch is a project of the Scratch Foundation. It is available for free at <http://scratch.mit.edu>. Interface screenshots used under Creative Commons Attribution-ShareAlike terms.

Interactive Geography, Learning platforms, Research and Practise tools

- **E-Paath and E-Pustakalaya** (OLE Nepal) – Licenced under CC BY-NC-SA 3.0
- **Google Earth** (Google LLC) – mapping and spatial exploration tool used under Google Earth’s standard permissions for educational reference
- **LearnEnglish Kids** (British Council) – Used for educational classroom reference
- **Typing.com** (Teaching.com) – used for educational touch-typing instruction and practice

Information and Media Resources

- **Wikipedia** (Wikimedia Foundation) – Content referenced under the Creative Commons Attribution ShareAlike 4.0 (CC BY-SA 4.0) Licence
- **Pixabay** – Stock images and visual assets used under the Pixabay Content Licence (free for educational and commercial use)
- **United Nations Sustainable Development Goals** – (United Nations) - <https://www.un.org/sustainabledevelopment> - Used according to the guidelines on the United Nations website, for non-commercial, educational purposes. The content of this publication has not been approved by the United Nations and does not reflect the views of the United Nations or its officials or Member States.
- **YouTube** (Google LLC) – Educational videos embedded or linked under YouTube’s standard terms of service