

Year 1. Creating and Following Instructions

This unit encourages children to begin to think logically about scenarios and they are introduced to the meaning of 'algorithm' as a precise, step by step set of instructions to complete a task. This concept is at the core of coding. They make their own algorithms for the construction of a Lego model and understand that in order to achieve the effect they want when it is being built, the instructions need to be precise and need to be followed carefully. Pupils relate the understanding of algorithms to those that they follow in their daily lives (such as when making breakfast) and follow an algorithm to create a piece of digital art. They relate the act of having followed instructions to produce digital content to the 'behaviour' of a computer and begin to understand that computers work by following instructions. They learn that a 'program' is an algorithm that has been written for a computer and understand that it needs to be precise and accurate in order for the computer to produce the desired result. They explore what could happen as a result of following algorithms that are ambiguous and/or inaccurate and show understanding that if a task is not completed as it should be when following an algorithm it could be because there are errors in the algorithm that should be 'fixed'. Children are introduced to the terms 'bug' and 'debugging' and use these to identify 'bugs' and 'debug' instructions. This is a prior step to debugging coding.

Vocabulary: Algorithm, Precise, Instructions, Program, Bug, Debug, Save

Knowledge covered:

NC	Ladders Objectives
Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.	Y1- CS1 I understand that an algorithm is a precise, step-by-step set of instructions to complete a task Y1- CS2 I know that an algorithm written for a computer is called a program
Use logical reasoning to predict the behaviour of simple programs.	prior step to Y1-CS4 (I can say that if something does not work how it should, it is because my <i>code</i> is incorrect) children are looking at instructions, recognising that if something does not work how it should, it is because the <i>instructions</i> are incorrect, not <i>code</i> as specified in the objective
To create and debug simple code	prior step to Y1-CS5 (I can try and fix my <i>code</i> if it isn't working properly) children are writing instructions and fixing their instructions if they don't produce the desired result, not <i>coding</i> as specified in the objective

Medium Term Lesson Plan:

Lesson 1 (unplugged)	L.I: I can explore algorithms (follow Lesson 1)	S.C: Follow an algorithm Create an algorithm Discuss what makes an algorithm successful (Y1-CS1)	<u>Key Question (from KWL)</u> What is an algorithm? (Y1-CS1) What algorithms do you follow in your daily life?
Lesson 2 (part 1)	L.I: I can follow an algorithm on the computer (follow lesson 2 – can use 'Sectioned Bird.' Stop at Activity 3: making a program)	S.C: Follow an algorithm step-by-step Follow an algorithm accurately Know that computers need precise instructions to follow Know that an algorithm written for a computer to follow is called a 'program'	<u>Key Question (from KWL)</u> What is an algorithm? (Y1-CS1) What is a program? (Y1-CS2) Why is it important that programs are precise and give instructions step-by-step?

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Lesson 2 (part 2) N.B This could be split over 2 lessons)	L.I: I can create and follow an algorithm on the computer (1st lesson: Pupils write/create their own algorithm to paint Hansel and Gretel House. 2nd lesson: Pupils follow someone else's algorithm on comp to complete the Paint Project)	S.C: Write step-by-step instructions Write precise instructions Write instructions in correct order Complete a task by following the algorithm accurately	What is an algorithm? (Y1-CS1) Why might following an algorithm not complete a task correctly? (links to Y1-CS4) What should you do if an algorithm doesn't complete a task correctly? (links to Y1-CS5)
Lesson 3 (part 1) Might want to combine with lesson 3 part 2	L.I: I can explore what happens if an algorithm is not precise (follow written slides – pupils follow my algorithm to paint a house. They don't get the desired result as there is a bug. They debug. Could look at the wrong sandwich from lesson 3 part 2 together as plenary)	SC: Identify errors (identify bugs) Correct errors (Debug) links to Y1-CS5	<u>Key Question (from KWL)</u> What is an algorithm? (Y1-CS1) Why might following an algorithm not complete a task correctly? (links to Y1-CS4) What should you do if an algorithm doesn't complete a task correctly? (links to Y1-CS5)
Lesson 3 (part 2) NB: Optional. Could be discussed as a whole class. Could be combined with lesson 3 part 1.	L.I: I can debug an algorithm (follow lesson 3)	S.C: Identify errors (identify bugs) Correct errors (debug) – links to Y1-CS5	What is an algorithm? (Y1-CS1) Why might following an algorithm not complete a task correctly? (links to Y1-CS4) What should you do if an algorithm doesn't complete a task correctly? (links to Y1-CS5)