

Taking Learning Outdoors

Learning experience and season	
Winter: 'Offline' Coding / Grid references	
CfE Level: First	
Experiences and Outcomes and associated benchmarks	
<u>E&Os</u> I can explore and comment on processes in the world around me making use of core computational thinking concepts and can organise information in a logical way TCH 1-13a I understand the instructions of a visual programming language and can predict the outcome of a program written using the language. TCH 1-14a I can describe, follow and record routes and journeys using signs, words and angles associated with direction and turning. MTH 1-17a I have developed an awareness of where grid reference systems are used in everyday contexts and can use them to locate and describe position. MTH 1-18a	<u>BMs</u> TCH 1-13a - Follows sequences of instructions/algorithms from everyday situations for example, recipes or directions, including those with selection and repetition. - Identifies steps in a process and describes precisely the effect of each step. TCH 1-14a - Simplifies problems by breaking them down into smaller more manageable parts. - Constructs a sequence of instructions to solve a task, explaining the expected output from each step and how each contributes towards solving the task. MNU 1-17a - Uses technology and other methods to describe, follow and record directions using words associated with angles, directions and turns including, full turn, half turn, quarter turn, clockwise, anticlockwise, right turn, left turn, right angle. MNU 1-18a - Describes, plots and uses accurate two figure grid references, demonstrating knowledge of the horizontal and vertical location.
Overview of learning experience	
Pupils follow simple and increasingly more complex instructions to collect items on a grid or to reach a given grid reference.	

Outline of learning	
<u>LI/SC</u> To create/follow an algorithm. • I can follow instructions/ an algorithm to reach the correct location. • I can create an algorithm.	<u>Resources</u> • Chalk • Paper • Pencils • Metre Sticks
<u>Description of learning experience and assessment opportunities</u> Discussion: What are instructions? Why are they important? Use examples of familiar procedures such as building a model or a recipe to demonstrate how a problem is broken down into steps and the importance of following the steps in the correct order. Explain that a sequence of instruction is also known as an algorithm. Activity 1: Outdoors, draw a 10 x 10 grid (this grid can be smaller or bigger depending on the needs of the pupils) on the ground using chalk or use an existing playground grid. Place items or images of winter related items (e.g. hat, scarf, gloves...) on different squares on the grid. Starting at the bottom left square, provide the pupils with single step instructions to reach each item (e.g. Forward 3, Turn Left, Forward 2). Can the pupils work out which item relates to each set of instructions? Now ask the pupils to create a set of instructions (algorithm) to collect all the items? Can they do this without retracing their steps? Activity 2: Introduce a grid reference system (A-J horizontal, 1-10 vertical), repeat the activity but this time remove the items and provide the pupils with grid references they must visit, ask them to create an algorithm to visit all the grid references. Which pupil/group has the most efficient algorithm? Now provide the pupils with a complex algorithm to reach a final grid reference. Can the pupils follow the instructions and determine the final grid reference? Activity 3: The pupils now create their own grids, this could be in the form of a map and challenge each other to follow algorithms and determine the destination/grid reference.	
Consideration of risk Take care in wet or icy conditions.	
Taking it further – what else could you do? In class, use Scratch coding to create a sequential algorithm. Pupils could create an outdoor game based on algorithms and/or grid references.	