Mendell Primary School

Aspire   Challenge   Achieve

Medium Term Plan Design Computing

Year Group: 1	Term: Spring #2 2022	Teacher: Nicole Morning	Subject lead: Justin Cowley	Overview: Algorithms: Understanding what an algorithm is, how they are used and why they are important in computing.	Key End Points: By the end of this unit children will be able to: - To explain what an algorithm is. - To explain why algorithms are used to control a device - Write short algorithms to achieve a task
Links to other learning:	Prior Learning: F1: When buttons on a technological toy are pushed, they will behave in different ways F2: Technological toys need to be instructed to achieve an outcome.	Future Learning: In Y2 children will be using algorithms to predict the behaviour of a computer. They will be introduced to events and debugging algorithms.	High Quality Text:	Risk Assessment:	Misconceptions: Not all devices or computers use the same 'language' or symbols in their algorithms but the algorithms all follow the same logical sequence.	Teacher CPD: Teacher must complete the Code.Org level B

	Learning Intention	Lesson Outline (Key Questions in colour)	Resources	Vocabulary	Lowest 20% Adaptations
1	- I know to that an algorithm is a set of instructions to achieve a task.	**Computing is the use of devices to create, store and manipulate data** In this lesson we are going to learn what algorithms are to allow us to think like computer programmers. Read the story of 'The Ant and the Grasshopper' to the class. Ask the children which would they rather be, the ant or the grasshopper? Discuss that although the grasshopper seemed to have more fun in the summer, because he didn't follow an algorithm he was short of food in the winter. Ask the children what they think an algorithm is. Explain that an algorithm is a set of instructions that need to be followed to achieve a goal or aim. Give the children the example of brushing their teeth in the morning. Ask them to work in pairs to come up with the set of instructions for cleaning their teeth. Work through as a class and create an algorithm for cleaning our teeth. What would happen if we moved one of the steps to the end (for example, if we put the toothpaste on the brush at the end)? Algorithms have a logical order and this order is important for the task to be completed. Provide the children with some bread, butter, jam and a knife. Ask them in pairs to write an algorithm to make a jam sandwich. Remind the children that they must include ALL the steps, no matter how small (taking the lid off the jam jar, picking up the knife etc). Children to write their algorithm in their books.	Ant & Grasshopper story (resources)	Algorithm Instructions	Set of picture steps to create a sandwich which the children must put in correct order.
2	- I can use symbols to create an	**Computing is the use of devices to create, store and manipulate data** In this lesson we are going to learn to write algorithms to allow us to control a device	Robot language dictionary	Symbols Device Algorithm	

	algorithm which controls a device.	Explain to the children that they have been turned into a "robot master" and their partners have become their "robot". Give each child a "Robot Language Dictionary" and explain to them that this is the only language their robot understands. The dictionary has symbols for "move left leg forward", "turn left", "grab", "drop" etc. Demonstrate with the children what each symbol means and that each time they use the symbol the device must only do the action once (if they want it to do things multiple times they need to draw the symbol again) Use the hall (or outside) and create a variety of simple obstacle courses. The goal is for the robot masters to get their robots to go through an obstacle course, pick up a ball and bring it back. The chldren have to write an algorithm that will tell the robot how to do all that. Every time they write an algorithm, they hand it to their robot and the robot executes it. To do that, give each pair a whiteboard and pen where they copy symbols from the dictionary to write their algorithms. Start with simple courses (maybe even just the ball to start with) and increase the complexity with obstacles to move around or over. When the children have mastered the simple algorithms to complete this task, they can use the space on the Robot Language Dictionary to create their own moves and symbols to control their robot. Evidence in books should be a PicCollage of photographs from the lesson showing the children controlling their robots and a sample of the algorithms they created.	Use of the hall (or outside space) Ten tennis balls		
3	- I can use algorithms to control a floor robot.	**Computing is the use of devices to create, store and manipulate data** In this lesson we are going to use our algorithm knowledge to control floor robots Show the children a Beebot and explain that this is a robot that follows simple commands, similar to our robots that we controlled last week. To allow us to all control a Beebot we are going to use the ipads rather than the actual robots. Demonstrate how to open the Beebot app (use class visualiser with an ipad). Show the children how to access the 'garden' level and how to start level 1. Ask the children to work through each level. Do not explain to the children how to create their algorithms. Let the children explore and experiment with the app for ten minutes. Then ask the class what they have found out. Discuss that the forward arrow does not make the Beebot move up the screen but instead it moves the direction the Beebot is pointing (this is a common misconception so ensure all children understand). Allow the children to work through further levels. In their books, pre-stick a suitable screenshot of a level (see resources folder). Children to write the algorithm beneath the picture which will allow the Beebot to reach it's goal.	• Black set of ipads • Beebot • Selecton of Beebot app levels	Floor Robot Algorithm Beebot App	
4	- I know what an algorithm is - I can order blocks in a logical sequence	**Computing is the use of devices to create, store and manipulate data** In this lesson we are going to learn to write algorithms to allow us to control a device Remind the children how to log in to Code.org (from Aut term). Demonstrate on the class whiteboard. Show the children that the lessons have been changed so that they will now all be working on lesson 8. This lesson will introduce the concept of loops into the children's algorithms and build on the first three lessons allowing them to solve the tasks at each level. Allow the children to work through lessons 8 and 9. Evidence is provided on the Code.org dashboard.	Ipads or laptops (one per child)		
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