Medium Term Plan: Supporting Implementation of LTP/Progression Grid

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Subject: Computing – Programming: Robot Algorithms   KS1 – Year 2

NC/PoS:
- Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions
- Create and debug simple programs
- Use logical reasoning to predict the behaviour of simple programs

Prior Learning (what pupils already know and can do)
Understanding giving and following instructions, using floor robots to create and debug programs, using Scratch Jnr to create a program using blocks.

End Points (what pupils MUST know and remember)
- To describe a series of instructions as a sequence
- To explain what happens when we change the order of instructions
- To use logical reasoning to predict the outcome of a program
- To explain that programming projects can have code and artwork
- To design an algorithm
- To create and debug a program that I have written

Key Vocabulary
Instruction, sequence, language, algorithm, program, trial, bee-bot/floor robot, route, prediction, map, digital art/artefact, decomposition, debug

Recommended Resources:
https://tinyurl.com/ks1-robotalgorithms

Session 1: Giving instructions

How do we give an instruction? What type of language is used? Why do instructions need to be clear and precise? How can we create a sequence of instructions to create an algorithm? How can our instructions be amended if they are not acted on clearly?

Vocabulary: instruction, sequence, language, algorithm

Session 2: Sequencing

Why do instructions need to be given in a particular order? Would the outcome be the same if the order was changed? Can we trial this using a floor robot? What if the floor robot was trying to get to a specific location, could there be multiple routes then resulting in a different sequence order? When given a sequence of instructions, can we predict what will happen? How can we make informed predictions?

Vocabulary: sequence, trial, floor robot/bee-bot, instruction, route, prediction

Session 3: Making maps

Can we design and create a map of our school/local area to use with our floor robots? What might we include on it? Can use digital art to create the map? Is your map suitable for the floor robot; are the paths/roads wide enough?

Vocabulary: map, floor robot/bee-bot, digital art/artefact, route

Session 4: Creating routes

Where will your floor robot start? What is the final destination of the floor robot? What steps need to be taken to get from point A to B? How can we write this down using code? Do we need to debug our programs? What is an extra stop was added to the route, how would our algorithm change? Could we use decomposition to chunk the task?

Vocabulary: map, floor robot/bee-bot, digital art/artefact, route, code, algorithm, program, decomposition, debug
Future learning this content supports: The content of this unit will support other units on creating and implementing programs.