Department of Primary & Childhood Education
Lesson Plan 2021/22

Edge Hill University

Date:	Class: Year 2	Subject/topic: Computing – Algorithms	Time: 10.30 – 11.30

Prior knowledge: Children have written algorithms as an unplugged activity. They have designed Bee-bot mats for today.

Outcomes:
what composite knowledge/ skills do you want children to achieve?
Children will write an algorithm to program a Bee-bot, test the algorithm and debug it.

Assessment: Observation

Learning objectives:
Substantive & disciplinary knowledge

1. To design a route-based algorithm
2. To program a device with the algorithm and test it
3. To debug the algorithm and ensure it is accurate.

Key vocabulary: Algorithm, program, execute, test, debug	**Resources:** Bee-bots, Children's Bee-bot mats, algorithm cards, Bee-bot placeholders, worksheets for recording algorithms, programmer hats, debugger hats
Predicted misconceptions: Children must enter the algorithm as it is written and not change it. Children cannot pick up the Bee-bot if the program goes wrong	**Risk assessment:** Children moving between the carpet and tables needs to be controlled. Children using Beebots with batteries – check battery compartments are closed securely.

		SEQUENCE OF TEACHING & LEARNING		Edge Hill University
Timing: _consider pace of lesson._	**Role of the teacher & support staff:** _e.g. key questions, retrieval of prior learning, modelling and explanations, checking understanding, consider cognitive overload, effective use of additional adults, behaviour for learning._	**Children's steps in learning:** _what will the children be doing? Learn, practise and apply component steps._	**Adaptive teaching:** _consider adaptive strategies to support all pupils (including stretch and challenge & SEND), consider resources._	**Checking what children know, understand and can do:** _Key questions inc. hinge and retrieval/recall, assessment of outcomes._
Pre-lesson	Ensure Bee-bot mats are laid on the tables, worksheets for each child and Bee-bots are charged.			
10.30	On the carpet, ask children to recall learning.	Children answer the questions posed.		What is an algorithm? How did we use algorithms last lesson? What do the instructions in an algorithm need to be?
10.35	Explain children are to write an algorithm to move the Bee-bot from their start point on their map, to the end point. They need to navigate Bee-bot around any obstacles. Model the process for the children using a map on the whiteboard. Ask the children what the first instructions will be and collectively compile the algorithm. Write the instructions next to the map with the symbols.	Children listen

Children offer suggestions about each step in the instructions. | Children can use either words or symbols for their algorithm

Children working with the TA will be able to use algorithm direction cards. | Questions about the directions. |

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10.45	Give directions to move to the tables and begin work. Monitor and observe progress, supporting as needed. Hand out algorithm cards/ placeholder Bee-bots as needed.	Children move to their tables and apply their knowledge of algorithms to write the algorithm, using the map and worksheet.	Some children will need a placeholder Bee-bot card to work with their map. Some children may need algorithm cards to support them, rather than the worksheet	Check that children write an algorithm for their route (LO1)
11.00	Explain that children need to test if their algorithm works. Ask children how the Bee-bot works. Rules: children must program the Bee-bot exactly as it is written in the algorithm – do not make changes; once they have pressed Go, they cannot touch the Beebot – if it goes somewhere unexpected, write this down on your algorithm – what do you need to change to make the algorithm work? Explain the roles for the children – one is the **programmer**, the other wrote the algorithm and is the	Children work in pairs and put on their programmer/ debugger hats. One programs the algorithm into the Bee-bot, the other (child who wrote the algorithm) checks to see if the algorithm works. If it does not work, they note down when the algorithm went wrong and correct it (debugging).	Some children will work in a small group with the TA. TA should not program the Beebot for the children.	What do each of the buttons do on the Bee-bot? Which button must we press before we program the Bee-bot? Why? Check that children are programming, testing and debugging the algorithm (LO2&3) Make notes on your assessment grid: have children written an algorithm? Have they programmed a device

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	debugger (programmer & debugger hats for the children). They will swap roles at the mid-point. After 10 minutes, swap the roles.			with an algorithm? Have they traced the code and identified bugs? Have they corrected any bugs? You will be able to observe and ask children questions about their processes.
11.20	Bring the children back to the carpet and check progress through questioning.	Children answer questions about their testing procedures and algorithms.		Why do we test our algorithms? What kind of errors did we find in our algorithms? What can we learn from the errors we found? How did our algorithms help us to program a Beebot?

EVALUATION

Evaluation of pupils' learning:

Next steps:
e.g. how to address misconceptions, providing increased challenge or support, use of different resources or modelling techniques.

Evaluation of teaching:

Next steps:
e.g. subject knowledge, teaching strategies, behaviour management.