Blue-Bot Suggested Programme of Study

*Based on 45min lessons duration and a 36-week school year

Lesson no.	Computational theme	Hardware and Software	Theme	Suggested Lesson Activities	Computational thinking skills	Cross-Curricular links
1 / 2	Robotic Devices	Blue-Bot	What are Robotic devices? Where do we see examples in everyday life?	• Learners could research different types of robots and their purposes – they could be split into groups and given a theme each; i.e. in transport, education, manufacture, hospitality etc and as a group present their findings back to the class • Who has a robot at home? What does it do? • Students could design their dream robot – what would it do? What problems would it solve? • Students present their ideas for their robotic device to the class and invite questions in a "Dragons Den" activity		Numeracy Literacy Technology and engineering Social Studies
3			Say hello to Blue-Bot!	• Introduction to Blue-Bot • Free play which allows the learners to learn through enquiry – what does Blue-Bot do?	Pattern Recognition Algorithmic design Decomposition	Numeracy Technology and engineering
4	Algorithmic design (1)		Everyday algorithms	• Ask children to interrogate sequences of images and predict the next logical steps in the sequence, identify sets within the pattens • Discuss where we see routines in everyday life, examples of where steps have to be followed in a certain way i.e. Getting dressed, baking a cake • Ash leaners to write a simple everyday algorithm	Pattern Recognition Algorithmic design Decomposition	Numeracy Literacy The Arts Technology and engineering Social Studies

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5 6 7			Blue Bot around town	• Ask learners to work in groups to list their favourite places around town • Use a map or the internet to calculate the distance of each place from school • In the middle of a blank Blue-Bot mat draw (or stick a photo) of school • Ask students to create a scale to determine where to draw the other landmarks in relation to school • Once the mat is finished use Blue-Bot to undertake "real life" journeys i.e. From Laura's house to school, and the to the shops. • Storytelling activities can be linked to this to enhance the "reality" of the journeys the children are programming Blue-Bot to take	Abstraction Pattern Recognition Algorithmic design Decomposition	Numeracy Literacy The Arts Technology and engineering Geography
8 9			I am the Blue-Bot!	• Print a large copy of Blue-Bots controls and pin this to a tabard or T-shirt. • One child is the blue-bot, one is the programmer and one is the designer. • The designer creates the human sized maze (this is great in the yard with yard chalk) the designer adds flags or gems to squares that Blue must pass through. • The programmer gives the instructions to the Human Blue-Bot. • The Blue-Bot executes the programme accordingly. Inevitably there will be some mistakes and the trio will (as is human nature) try to fix these – which allows for some lovely discussions into Debugging.	Pattern Recognition Algorithmic design	Numeracy The Arts Phys Ed Geography

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10	Debugging (1)		What is debugging?	• Reflect on the previous lessons activities – who had to correct mistakes? (everyone!!) What is that called? Why do we do it? • Learners could research Grace Hopper and where the term "debugging" came form	Abstraction Pattern Recognition Algorithmic design Decomposition	Literacy Technology and engineering History Social Studies
11 12			Spot the error	• Using the tactile reader or instruction cards ask students to work in pairs to build algorithms that take Blue-Bot from point A to B on a mat. Ask them to make one deliberate mistake, the partner then debugs and tests the algorithm, repeat	Abstraction Pattern Recognition Algorithmic design Decomposition	Numeracy Literacy Technology and engineering Geography
13	Inputs and outputs		What is an input? What is an output	Discuss Inputs and outputs on real world technology, what is it used for and why do we need it? How are outputs helpful to different types of people (discuss accessibility for example that may have audio outputs for the visually impaired) Task – ask students to take a piece of household tech, how could additional inputs and outputs make this more accessible? I.e – voice controlled washing machines, alarms and haptic feedback on buttons etc.	Decomposition	Numeracy Literacy The Arts Technology and engineering Social Studies

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14 15			In and Out Blue	Blue-Bot has many inputs and outputs: Lights, sounds and his IR sensors can be used to create really fun lessons. Ask students to build a drive through burger bar and programme Blue to say different things on his buttons and "hello" notification. For example when moving forward he could say "hungry" (my learners think this is hilarious – hungry, hungry, hungry!) and then when he gets to the counter change his "hello" to his order and the Blue-Bot taking his order to the response, then as he drives out he can say something else. Learners can also design covers as uniforms for the burger restaurant.	Algorithmic design	Numeracy Literacy The Arts Technology and engineering
16	Algorithmic design (2)	Blue-Bot + Blue-Bot App	Introduction to the App	Ask learners to connect their Blue bot to the app – spend the lesson familiarising learners with the app and it's interface.	Abstraction Pattern Recognition Algorithmic design Decomposition	Numeracy Literacy Technology and engineering
17			A to B challenge	Use the Get from A to B activities in the app	Abstraction Pattern Recognition Algorithmic design Decomposition	Technology and engineering

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18			Obstacles challenge	Use the Obstacles Activities in the App	Abstraction Pattern Recognition Algorithmic design Decomposition	Technology and engineering
19			Fewer Buttons Challenge	As per the App activities	Abstraction Pattern Recognition Algorithmic design Decomposition	Technology and engineering
20			Random Instructions challenge	As per the App activities	Abstraction Pattern Recognition Algorithmic design Decomposition	Technology and engineering
21 22 23	Debugging (2)		Debugging in the app	Ask students to create a guide to Debugging to teach a younger student: • What debugging is • Why we use it • How to do it on a Robot • How to do it in the App	Abstraction Pattern Recognition Algorithmic design Decomposition	Numeracy Literacy The Arts Technology and engineering Social Studies
24	Iteration and Loops		What is iteration?	Discuss why iteration is important Give worksheets of long repetitive code and ask students to reduce this (on paper) using loop to create more concise instruction s Discuss real world tech that will use Iteration in its programming	Abstraction Pattern Recognition Algorithmic design Decomposition	Numeracy Literacy Technology and engineering

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25			Blue-Bot on Patrol	Use the town mat – and iteration to have Blue-Bot patrol the whole town in as few steps as possible	Pattern Recognition Algorithmic design Decomposition	Technology and engineering
26 27 28 29 30	Challenge 1		Independent topic	As students to research in detail a city of the world. For this project they must create: A hand drawn Blue-Bot Mat of their chosen city A Blue-Bot decoration relating to the national dress of the country the city is located in. The created mat must be imported into the Blue-Bot app The student must write a small story about Blue-Bots adventure in this city – during which he visits every location on the mat The learner must program the movement of Blue-Bot around the mat, in sync with the story. The learner must show evidence of iteration in their code.	Abstraction Pattern Recognition Algorithmic design Decomposition	Numeracy Literacy The Arts Technology and engineering Phys Ed Geography History Social Studies
31	Algorithmic design (3)	Blue-Bot + Blues Blocs App	Introduction to Blues-Blocs	Discuss the similarities with Scratch – and introduce students to the block based environment through free enquiry	Abstraction Pattern Recognition Algorithmic design Decomposition	Technology and engineering

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Lesson no.	Computational theme	Hardware and	Theme	Suggested Lesson Activities	Computational	Cross-Curricular links
32			**Translation of code**	**Ask student to translate algorithms from the Blue-Bot app (provided as a print screen) into the Blocs IDE**	**Abstraction** **Pattern Recognition** **Algorithmic design** **Decomposition**	**Numeracy** **Literacy** **Technology and engineering**
33			Different loops	Discuss the different types of iteration available in Blues-Blocs As learners to create a condition-based loop	Abstraction Pattern Recognition Algorithmic design Decomposition	Numeracy Technology and engineering
34			Introduction to branching	Introduce the concept of branching through the If statement, As students if they can create a random number generator and ask Blue to turn left on odd numbers and right on even numbers	Abstraction Pattern Recognition Algorithmic design Decomposition	Numeracy Technology and engineering
35 36	Challenge 2			Ask the student to translate their independent program into the Blues-Blocs environment and test	Abstraction Pattern Recognition Algorithmic design Decomposition	Numeracy Literacy Technology and engineering

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