Medium Term Unit Planning

Topic Name: Computing (Plastic Pollution)	
Learning outcome: To create interactive online Scratch games, with increasing levels and point scoring system.	
Hook: Playing existing Scratch games.	**Topic Showcase (e.g. display, museum, performance, presentation):** Presenting and playing each other's games.
Oracy: Children to present their Scratch games to the rest of Year 5.	**Key Vocabulary:** Scratch, programming, algorithm, debugging, coding, sprite, backdrop, operations.
Key Texts (whole class reading/end of the day book/Talk for Writing Texts etc.): • Ada Lovelace by The Doc – WCR • Tim Berners-Lee by Michael Aaron Dennis	
Citizenship/Community Opportunities (Focus – change in attitude/increase knowledge and awareness/make a difference): Opportunities for friends/family to play the Scratch games.	
Experiences/Visits/Visitors: Visit from an online gaming designer/creator.	
Main subjects covered: Computing	
Computing threshold concepts: **Code** This concept involves developing an understanding of instructions, logic and sequences.	

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Notes:			
This scheme of work will be linked directly to our 'Plastic Pollution' topic. The children will use their design and computing skills to create their own online Scratch game to communicate the dangers of plastic pollution.			
Lesson title and learning Intention	**Threshold concepts (success criteria)**	**Milestones (success criteria)**	**Lesson structure/differentiation**
1. To know what an algorithm is to create our own and debug when necessary.	**Code** This concept involves developing an understanding of instructions, logic and sequences.	Combine the use of pens with movement to create interesting effects.	Start with an unplugged activity - ask children to give the teacher instructions on how to make a milkshake. Teacher to follow instructions very literally to show children how precise they need to be. Explain to children that they have been writing algorithms (a set of instructions to fulfil a purpose). Explain the key aspects of algorithms. Discuss debugging algorithms (identifying and fixing problems). Children to investigate Scratch project created previously by

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			teacher which requires debugging. Children to identify and fix errors within the code. Can the children recreate the code without any bugs?
2. To design and program a character game.	**Code** This concept involves developing an understanding of instructions, logic and sequences.	Change the position of objects between screen layers (send to back, bring to front). Combine the use of pens with movement to create interesting effects.	Recap previous years learning about Scratch. Introduce children to new Scratch terminology, how the program works and end goal (to create a plastic pollution themed, point scoring game). Children to draw a background using blocks to make a maze, select and change a character sprite, program commands that control the movement of a sprite and program consequences for specific actions.

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3. To design an original character or backdrop for a game.	**Code** This concept involves developing an understanding of instructions, logic and sequences.	Set IF conditions for movements. Specify types of rotation giving the number of degrees. Change the position of objects between screen layers (send to back, bring to front). Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation. Combine the use of pens with movement to create interesting effects. Set events to control other events by 'broadcasting' information as a trigger.	Children to draw a background using blocks to make a more complex maze, use tools to draw my own character (sprite), program commands that change the backdrop and test and debug a program after making changes.

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		Use IF THEN ELSE conditions to control events or objects. Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions. Use lists to create a set of variables.	
4. To add features or effects to enhance a game.	**Code** This concept involves developing an understanding of instructions, logic and sequences.	Change the position of objects between screen layers (send to back, bring to front). Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation.	Children to add appropriate commentary to their code, add sounds as a consequence of an action, create events as a consequence to another action and make two characters move in relation to each other.

		Combine the use of pens with movement to create interesting effects.	
		Set events to control other events by 'broadcasting' information as a trigger.	
		Use IF THEN ELSE conditions to control events or objects.	
		Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions.	
		Use lists to create a set of variables.	
5. To create an original animated	**Code** This concept involves developing an understanding	Change the position of objects between screen	Children to create appropriate backdrops and sprites, plan sequences

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game with a specific goal.	of instructions, logic and sequences.	layers (send to back, bring to front).	of instructions (an algorithm), translate logical instructions into coding language (blocks) and test for errors and debug a code.
		Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation.	
		Combine the use of pens with movement to create interesting effects.	
		Set events to control other events by 'broadcasting' information as a trigger.	
		Use IF THEN ELSE conditions to control events or objects.	
		Use a range of sensing tools (including proximity,	

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		user inputs, loudness and mouse position) to control events or actions. Use lists to create a set of variables.	
6. To program costume changes for a sprite.		Set IF conditions for movements. Specify types of rotation giving the number of degrees.	Children to design new costumes for an existing sprite, design code that switches from one costume to another and add appropriate effects to complement a change of costume.

7. To add point-scoring and levels to game code.		Use the Boolean operators
		   () < ()
		   () = ()
		   () > ()
		   ()and()
		   ()or()
		   Not()
		to define conditions.
			Children to identify new features to be added to a game, create a variable, use code to increase the value of a variable and add relevant messages that are linked to a final value.

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		Use the Reporter operators () + () () - () () * () () / () to perform calculations. Pick Random () to () Join () () Letter () of () Length of () () Mod () This reports the remainder after a division calculation Round () () of ().	