



MINECRAFT

EDUCATION EDITION

Educator Guide

60 minutes

Single Student

CODE TOWN

HOUR OF CODE - PART 2

EDUCATOR GUIDE

[EDUCATION.MINECRAFT.NET](https://education.minecraft.net)

THEME OVERVIEW

The town mural is missing! It was constructed of 9 puzzle pieces that are now scattered throughout the village. Students need to use their coding skills to retrieve the puzzle pieces, bring them back & place them in the frames to restore the mural.

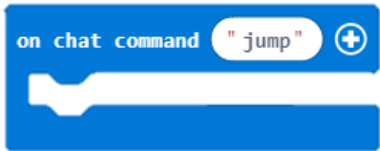





CODING OBJECTIVES

By the end of the lesson students will:

- Create coding solutions that include sequences, loops, while loops and nested loops
- Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions
- Iterate on solutions to complete a task

The lesson is a continuation of the [AI for Good Hour of Code](#) lesson that should be completed as a Part 1 of the experience.

CODING BLOCKS

	On chat command Runs the code when the student types the chosen text in the chat window.
	Repeat Runs the code a defined number of times.
	Agent move Tells the Agent to move in a certain direction by a defined amount.
	Agent turn Tells the Agent to turn left or right.
	Agent destroy Tells the Agent to break a block in a defined direction.
	Agent collect all Tells the Agent to collect all broken blocks and items next to it.



	Agent detect Detects if there is a block next to the Agent in a defined direction.
	Agent place Tells the Agent to place an acacia block in the Minecraft world in a defined direction.
	Agent drop all Tells the Agent to drop its entire inventory in the given direction.
	Agent till Tells the Agent to till the ground in the given direction.
	Agent plant carrots Tells the Agent to plant carrots.
	Goal not reached Acts as a condition.
	If then Runs code when a condition is met.
	While Repeats the code if a defined condition is met.

KEYWORDS

NPC - Non Player Characters in the game who provide challenges, instructions, and encouragement to the students.



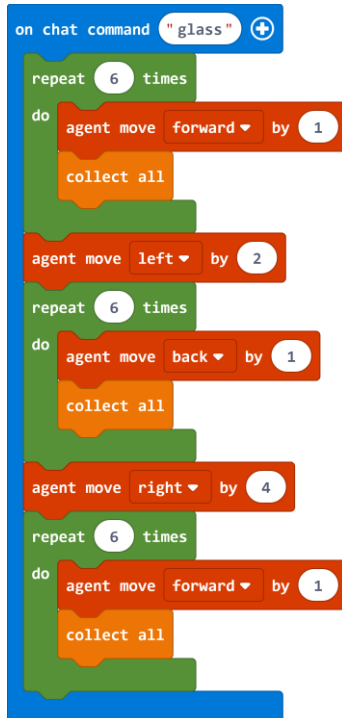
START OF LESSON PROCEDURE

Number of Activities: 9

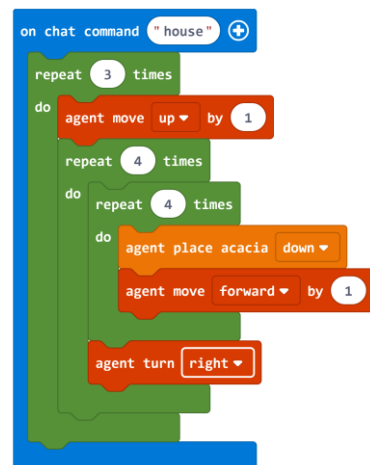
Please note that there are multiple ways to solve the coding challenges presented in the lesson. The answer keys, provided below, provide a potential solution, of which there can be many.

LESSON ACTIVITIES & CODING SOLUTIONS: 55-60 minutes

Broken Glass: students need to program the Agent to collect all the broken glass in the house.



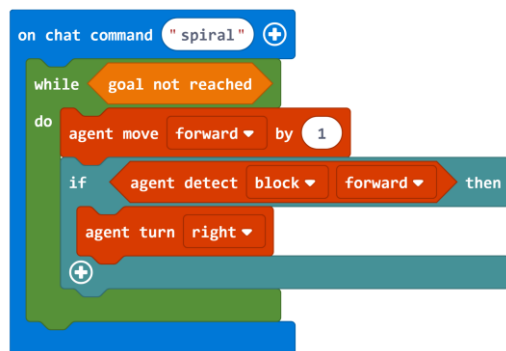
Building a House: students need to program the Agent to build 4 walls 3 blocks high.



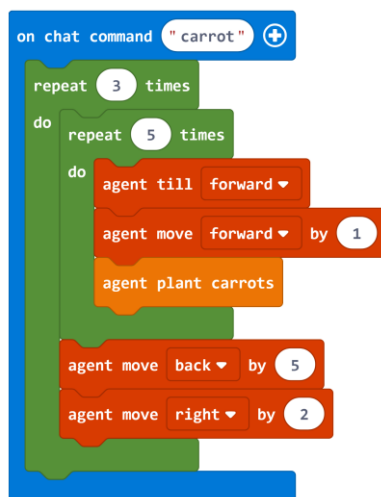
Staircase: students need to program the Agent to move up and reach the gold plate that is on top of the staircase.



Spiral: students need to program the Agent to stand on the golden plate at the center of the spiral. Encourage students to use while loops to solve this puzzle.

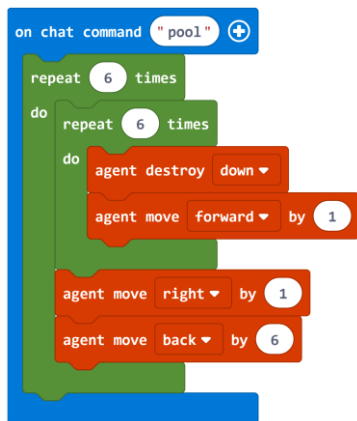


Carrots: students need to program the Agent to till and re-plant the garden with carrots.

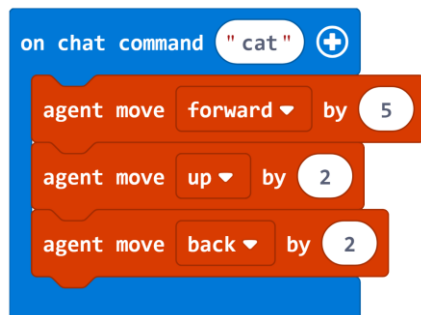


Pool: students need to program the Agent to dig a pool that is 1 block deep.





Cat in the house: students need to program the Agent to stand on the gold plate to open the door.



Haunted house: students need to program the Agent to restore power to the locks by placing a redstone torch on top of the 3 gold plates.



Gold plate: students need to program the Agent to stand on the gold plate inside the house.



```
on chat command "plate" +
  agent move forward by 3
  agent move right by 3
  agent move back by 1
```



CODING CONCEPTS

The lesson explores the following computer programming concepts including:

- **Sequencing:** The Agent will move in order that you sequenced. A sequence is one of the basic logic structures in computer programming. In a sequence structure, an action, or event, leads to the next ordered action in a predetermined order.
- **Iteration:** In Computer Science, “iteration” is just a fancy term to make things repeat over and over again. To learn more: <https://minecraft.makecode.com/courses/csintr/iteration>
- **Loops:** The loop command only repeats when a condition is met ('true'). The condition can only be 'true' or 'false'. If it is 'true', the while coding block will repeat the code and if it is 'false' it will stop.
- **Nested loops:** The loop command is within another loop command, they are nested within each other (like nested dolls).
- **Events:** The animals and plants only appear when the event is triggered, in this case, the event is when the player walks in the area. More information can be found here: <https://minecraft.makecode.com/courses/csintr/events>

EDUCATION STANDARDS

CSTA K-12	
1A-AP-08	Model daily processes by creating and following algorithms (sets of step-by-step instructions) to complete tasks.
1A-AP-09	Model the way programs store and manipulate data by using numbers or other symbols to represent information.
1A-AP-10	Develop programs with sequences and simple loops, to express ideas or address a problem.
1A-AP-11	Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions.
ISTE	
3B	Establish a learning culture that promotes curiosity and critical examination of online resources and fosters digital literacy and media fluency.
6B	Manage the use of technology and student learning strategies in digital platforms, virtual environments, hands-on makerspaces or in the field.

