



# MINECRAFT

## EDUCATION EDITION

### **Educator Guide**

Block 2 - Lesson 6

45 minutes

Collaborative Build

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## **Revisiting biomes**

## **Collaborative build**

## OVERVIEW

Tell students: let's take everything we've learned from the different planets we've visited and get creative. When you visit Comdr. Cadfield on the ship you can revisit each of the planets we have worked in. Each planet will have five different activities to test your coding skills with the Agent. Working with your friends see how many of the coding puzzles you can solve.

## THINGS TO KEEP IN MIND:

- The lesson provides a lot more freedom in how students will tackle the activities and in what order;
- The lesson is collaborative, which means students will be working in groups in the same world;
- No "reset" activity is provided for this lesson;
- No "activity complete/ lesson complete" signs are provided for this lesson;
- Plan to leave 10 minutes at the end for students' presentation of the projects.

## LESSON RUNDOWN:

- 5 min - Review
- 5-10 min - Planning, forming groups
- 20-25 min - Collaborative build
- 10-15 min - Presentation

## REVIEW

Split students in groups of 4-5, they will be working together. Prior to working in Minecraft, they need to review the concepts learnt in this block.

Tell students: in your group, look at the code examples below. What concept of coding is demonstrated in the example? Discuss it in your group and explain why it is used and purpose it has in learning Computer Science.

Concepts covered:

**Conditional** - An action that occurs if something specific happens.

**Repeat Loop** - repeats the action a certain number of times.

**While Loop** - repeats the action until a certain condition is met.

**Debugging** - the process of finding and removing errors in code.

**Comparison Operator** - to compare two values against one another. That comparison gives us a **Boolean** result of either **True** or **False**.

**Boolean** - A value that is either true or false.



```

on chat command "material"
  repeat 3 times
    do
      agent move left by 1
      if agent inspect block forward = yellow then
        agent destroy forward
        agent collect all
  
```

```

on chat command "1"
  while agent detect block down
  do
    agent move forward by 1
  if agent inspect block down = green then
    say "Crater found!"
  
```

```

on chat command "2"
  while agent inspect block down = blue
  do
    agent destroy down
    agent move down by 1
  agent destroy down
  agent collect all
  say "Ice collected!"
  
```

```

on chat command "1"
  while agent inspect block down = grey
  do
    if agent detect block right then
      agent move forward by 1
    else
      agent move right by 1
  if agent inspect block down = black or agent inspect block forward = grey then
    agent destroy down
    agent collect all
  say "Crater found!"
  
```



```

on chat command "3"
  agent set block or item count 64 in slot 1
  while agent inspect block down ≠
  do
    if agent inspect block down = or agent inspect block down = then
      agent turn left
      agent destroy down
      agent collect all
    if agent inspect block down = or agent inspect block down = then
      agent turn right
      agent destroy down
      agent collect all
  agent move forward by 1

```

## Collaborative Building

Students need to work in groups to decide which area they will be building in. Recommended number of players per world is 4-5. Some useful tips on how to host/join worlds is here: <https://minecrafteeducation.zendesk.com/hc/en-us/articles/360001429408-How-To-Set-Up-A-Multiplayer-Game->

Students have a choice: they can either try the presented activities or build their own with code.

There are 4 areas and 5 potential activities. The areas include:

- Venus
- Mars
- Ganymede
- Mercury

Each area will have the following activities for groups of students to code to test their knowledge of the concepts they have learned in the lessons.

- Mine the ore
- Complete the maze
- Collect the golden blocks
- Follow the wall to the gold blocks
- Find the diamonds in the crater



Encourage students not only complete the activities presented but also come up with their own coding activities for the Agent, using provided coding blocks.

After students are done with their area, they need to be asked to present in front of the whole class on their activities and solutions.

## **SUCCESS CRITERIA:**

Each group of students demonstrates

- At least 1 completed coding activity per group;
- Coding solutions include repeat loops, conditional loops, conditionals and operators;
- Students have arrived at more than one successful solution to each of the puzzles.



## 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.
1A-AP-12	Develop plans that describe a sequence of events, goals, and expected outcomes.
1A-AP-14	Debug, (identify and fix) errors in an algorithm or program that includes sequences and simple loops.
1B-AP-08	Compare and refine multiple algorithms for the same task and determine which is the most appropriate.
1B-AP-10	Create programs that include sequences, events, loops, and conditionals.
1B-AP-11	Decompose (break down) problems into smaller, manageable subproblems to facilitate the program development process.
ISTE	
3D	Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.
4A	Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
5C	Students break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.

