



LESSON 13

Terraform with Minecraft



Beginner



1 hr 15 min

Students will build a landform they've learned about in class using code in Make Minecraft.

OBJECTIVES



Learners will understand of features of a landform, biome, or place (Examples from schools: Terra del Fuego; Mt St. Helens; tundra).



Learners will be able to create a plan for constructing a landscape and use digital tools, like Kano Code and Minecraft, to build according to the plan

STANDARDS



K12 CS:

Computing Systems. Troubleshooting;
Algorithms and Programming. Control;

Algorithms and Programming. Algorithms

Algorithms and Programming. Program Development



CSTA:

K-2: 1A-A-5-2, 1A-A-3-7, 1A-A-6-8

3-5: 1B-A-2-1, 1B-A-5-4, 1B-A-3-7, 1B-A-6-8

6-8: 2-A-5-6

9-10: 3A-A-5-4

Introduction

🕒 10 mins

Starter

Teacher to ask students to get into pairs or groups and discuss:

- A historic or popular place they have been - why do many people go to this place?
- An unusual place they have heard about or seen on TV - what was unusual about this place?

Teacher to introduce the idea that computers can be programmed to create virtual and visual worlds - and with the ability to code, they will have the power to create virtual worlds!

Content refresher: Teacher to review an important landform or biome the class has learned about this year -- examples include mountain ranges, lakes, beaches, or glaciers.

Ask students: If you had to build or draw this landform, how would you do it?

Today students form a code team and use Minecraft start to create a virtual environment!

Collect Kanos

🕒 5 mins

Retrieve Computers, Turn On, Log In..

Exploration Activities

🕒 35 mins

Challenge 1 (Optional):

If paper and pencil are available, students to spend 15 minutes drawing their planned landscape first with the [Sample Worksheet Template](#).

Challenge 2:

In pairs, students choose an aspect of their landscape and reflect at least 3 structures from that landscape in their Minecraft world.

Challenge 3:

In at least one case, students describe another method for building their structure. For example with Tierra del Fuego or another mountain-like structure, they can use:

- Smaller squares on bigger squares, OR
- Building in slices using large rectangles and/or using the air blocks or their sword to delete blocks
- Other methods...

Challenge 4:

Create at least one structure using Hack Minecraft blocks from the playground.

Save your work and share to Kano World!

Closing

🕒 15 mins

Sharing

Choose groups to describe their formations to the class. Groups to outline how they completed each challenge:

- What were the 3 formations?
- What is one structure that they could have created another way?
- How did they use the Kano Blocks? Why was using code better or worse?

Tell students to fill out their daily logs for their engineering journals!

Optional: Hand in plan

Extension

Have students fill out “Terraform Minecraft” worksheet that can be found in the appendix!

Kano Clean-up

🕒 5 mins

Power down and put away Kanos

Reflection Questions:

What were the 3 formations?

What is one structure that they could have created another way?

How did they use the Kano Blocks? Why was using code better or worse?

Programmer Questions

Directions: If you wanted to create a mountain in 1 key what coding blocks would you use and why? You can write out the name of the blocks or draw them below!

Creator Question:

In the space below draw the next Minecraft structure you want to terraform. As well, label how you will code each section of the structure. What type of blocks would you use to create it?



anyone can make™

Terraform Answer Key

ANSWER KEY

Explorer Questions

Learners should draw either all or part of their structure to the best of their ability. Let them color and add detail as they like!

Reflection Questions:

What were the 3 formations?

All Learners	Most Learners	Some Learners
<ul style="list-style-type: none"> Have 3 formations 1 sentence for each formation 	<ul style="list-style-type: none"> Have 3 formations 1 - 2 sentence for each formation 1 sentence on the code blocks used 	<ul style="list-style-type: none"> Have 3 formations +2 sentence for each formation +2 sentence on the code blocks used

What is one structure that they could have created another way?

Answers can include using other blocks, building with individual blocks, using loops, etc. Let them be creative!

How did they use the Kano Blocks? Why was using code better or worse?

You will get a variety of answers. The main objective is to see if they can recognize if there code was efficient. Was there a way to build the same structure in less time? Was there a way to build their structure that would make it more detailed?

Programmer Questions

For this question learners should be demonstrating critical thinking on how to create a structure with the code blocks. Examples of creating structures quickly would be to:

- Use the craft block to create a sphere, cube, or pyramid
- Use a loop to repeat a structure
- Use conditionals and loops to give parameters for their structures

Creator Question

Learners should have a drawing that is clearly labelled. The labels should include which blocks would be used. For more advanced learners they make explain why they used the blocks the picked.