

Class 4 - Building an Environmentally Friendly City (Minecraft)

[Lesson 1 - Create a presentation about cities around the world](#)

[Lesson 2 - Design the layout of a city using spreadsheets](#)

[Lesson 3, 4 & 5 - Use Minecraft to create a city](#)

[Lesson 6 - Defend the city](#)

Assessment focus areas: Digital Literacy & Information Technology

Beginning (Must)	Developing (Should)	Mastering (Could)
Insert text and images into a Google Slide.	Navigate Google Maps and take screenshots of different cities from an aerial view.	Make logical decisions about where to locate different buildings in the Minecraft world. Explain these decisions on the digital portfolio alongside relevant screenshots.
Define and identify the differences between commercial, industrial, municipal, public services and residential buildings.	Correctly format cells on a spreadsheet to represent the map of a city.	
Control and navigate an avatar in a Minecraft world.	Build different structures in Minecraft appropriate to the assigned construction group.	

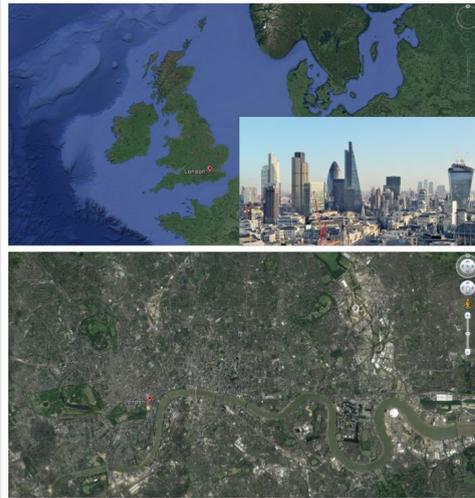
Lesson 1 - Create a presentation about cities around the world

Introduction

Students will use [Google Maps](#) to find different cities around the world. Model how to navigate Google Maps (by searching for different cities), and invite volunteers to demonstrate how to use the program. Once students have found a city in Google Maps, they should take a screenshot and upload this image to a Google Slide presentation. As students work through this task, they should also research and add examples of how environmentally friendly the city is.

Activity

Students to create a Google Slide, which features five different cities from around the world. This should include a title page, "Cities Around the World". Each slide should contain at least two images of the city (one of which should be a screenshot from Google Maps showing an aerial view of the city). At least three interesting facts related to the city's environment should be written about the city next to the images.



London

- London is in the southeast of England.
- It is the biggest city in Europe.
- The tallest building in London is the Canary Wharf Tower.

When students have finished this presentation, it should be embedded into their digital portfolio.

Plenary

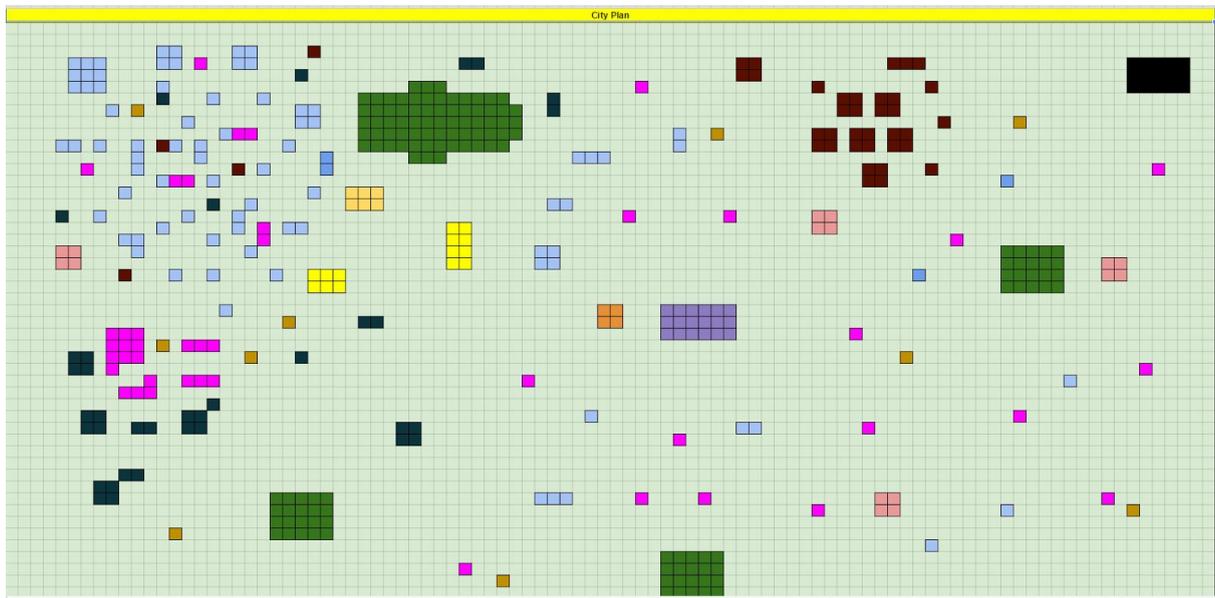
Ask for volunteers to present what they have learnt about different cities around the world. Do students notice any similarities between the cities they have looked at based on the aerial screenshots they have taken - e.g. plenty of roads and transport links, usually close to the sea, etc. Which cities do students judge to be the most environmentally friendly and why.

Lesson 2 - Design the layout of a city using spreadsheets

Introduction

Show the students this [video](#), which will brief them on what they will be doing in ICT for the “Building a City” unit.

After watching the video, explain that before students can begin to build their city using Minecraft, they must first design the city’s layout using Google Sheets. Brainstorm ideas for what would make an environmentally friendly city layout - e.g. landfill site far away from residential areas, plenty of parks, access to public transport links, etc. Make sure that you share beforehand this [city design template](#) via Google Classroom. Open up a copy of the [design template example](#) and demonstrate how to create the landscape design of a city:



Explain that this design template example is not yet finished. Cross reference with the colour key sheet, and ask students to identify some of the different buildings based on the colour of the cells. Ask: what is missing from this design? (answer: roads)

Next lesson students will be working in groups according to different construction projects. Make sure that students are familiar with these different categories for buildings:

Commercial - buildings used to sell goods & services (e.g. shops)

Industrial - buildings used to make products (e.g. factories)

Municipal - buildings used by the government (e.g. parliament)

Public Services - buildings and infrastructure provided for use by the public (e.g. roads)

Residential - buildings that provide people with a place to live (e.g. apartments)

Activity

Using the [city design template](#), students should follow the colour key to design the layout of their city.

On the colour key tab, students should also complete the table, writing up which buildings belong to which category:

Commercial	Industrial	Municipal	Public Services	Residential
Gas station	Factory	City Hall	Fire station	Housing
Restaurant		Parliament	Hospital	
Shop			Landfill site	
Cinema			Park	
			Police station	
			Prison	
			Bus station	
			Roads	
			Roads	
			Schools	

Once they have finished, students should upload this design to their digital portfolio.

Plenary

Use NetSupport to showcase some of the students' designs. Discuss the locations where students have decided to put their buildings. For example, discuss why it might not be a good idea to put a prison or landfill site near a school or residential area. Where would it be best to put parks? Students will need to think carefully about the location of their buildings for next lesson, as they will be working together to build their city in Minecraft.

Lesson 3, 4 & 5 - Use Minecraft to create a city

Introduction

Explain to the students that during this unit, they will be working and collaborating together to build a virtual city, using Minecraft. Note - some students will be very familiar with Minecraft, so it will be their job to help support students to help their classmates.

Teacher Instructions for Opening Minecraft:

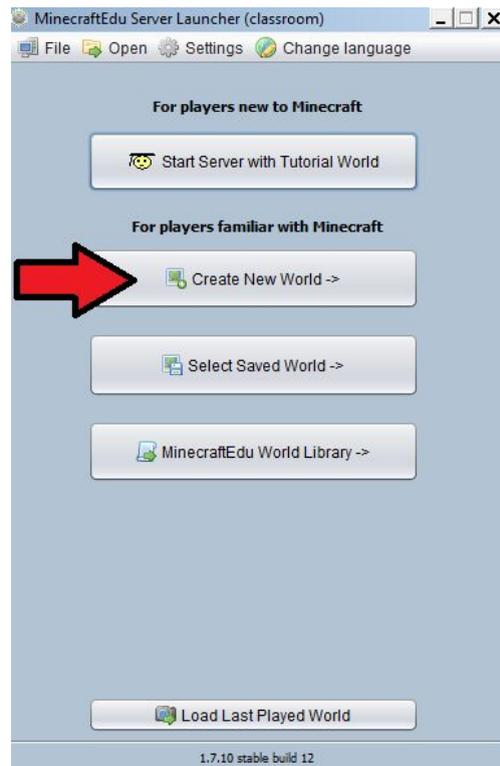
Step 1.

Open the Minecraft Server Tool on the teacher computer and select 'Start MinecraftEdu Server Launcher':



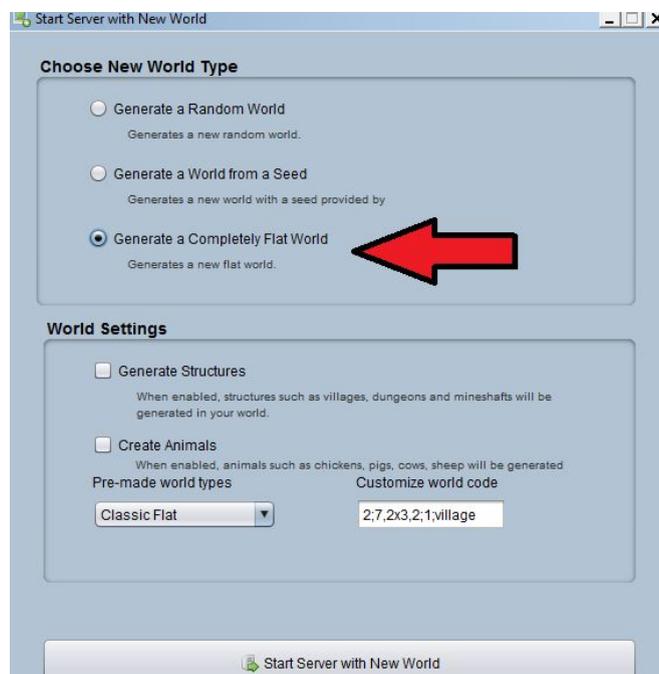
Step 2.

Click 'Create New World'.



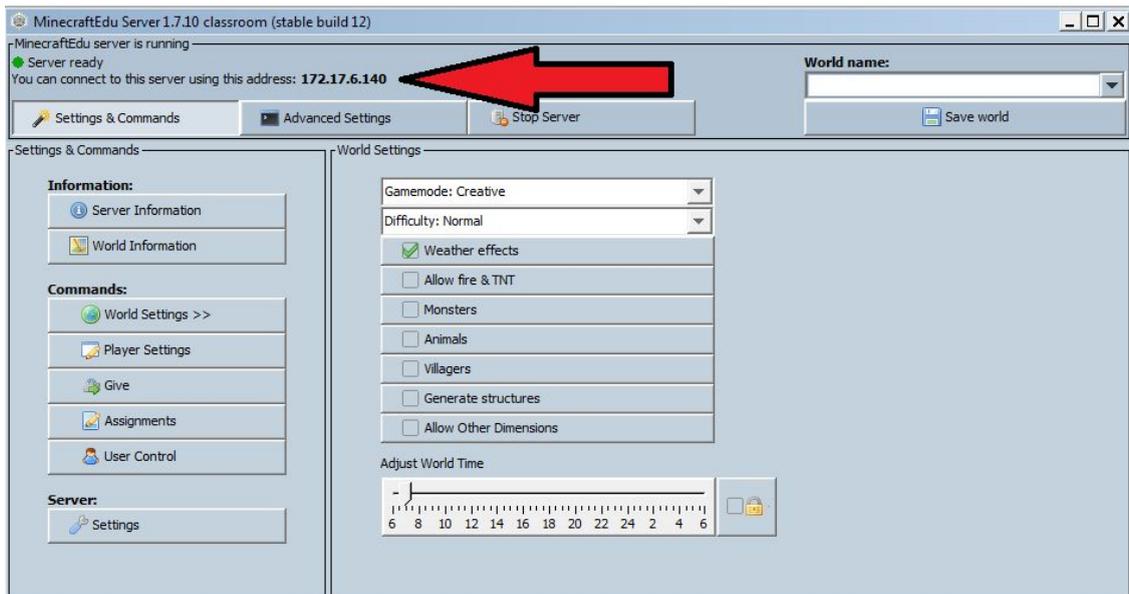
Step 3.

Select the option to 'Generate a Completely Flat World'.



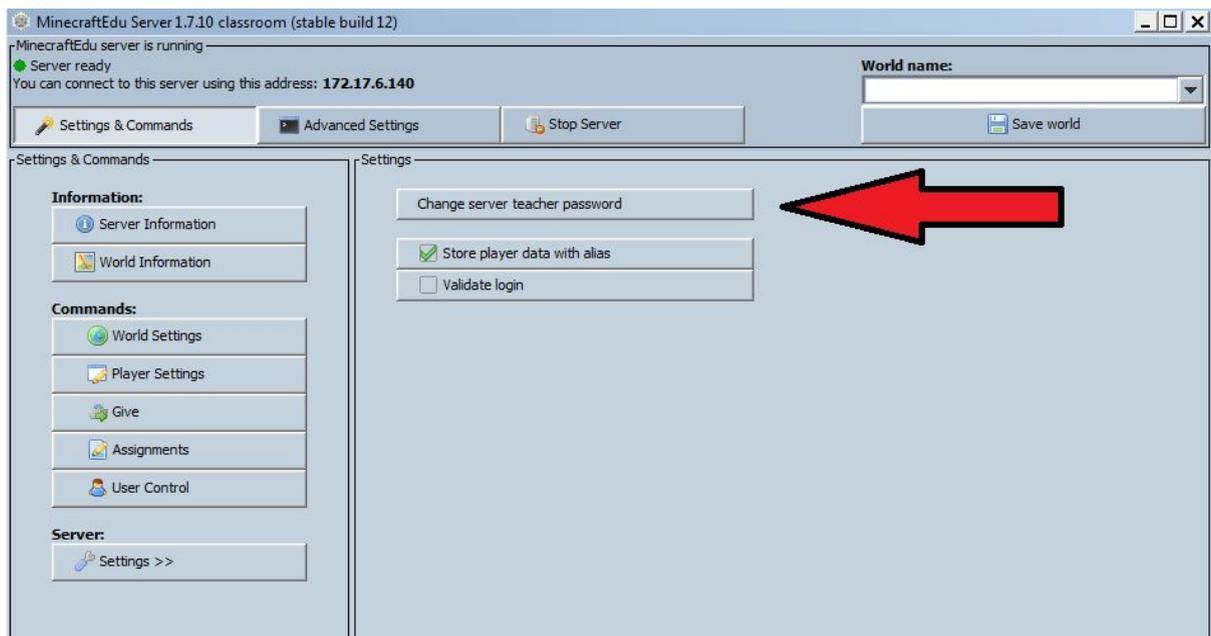
Step 4.

Write the Server number on the whiteboard. (Students will need this for later.) Then, from the World Settings tab, make sure the game mode is set to 'Creative'. In creative mode, students have all the building blocks available that they will need to build.



Step 5.

Next, make sure that you set a teacher password, e.g. British123. (You will use this to enter the Minecraft the world as a teacher.)



Step 6.

Before students begin using Minecraft, make sure that you divide them into five teams:

Commercial	Industrial	Municipal	Public Services	Residential
-------------------	-------------------	------------------	------------------------	--------------------

Remind students of the different buildings associated with each category. Students in each of these construction teams will be making buildings appropriate to their category, e.g. students in the Commercial construction team will build shops, restaurants, etc.

Student Instructions for Opening Minecraft:

Step 1. Open up Minecraft from the Start menu and select 'Start MinecraftEdu'.



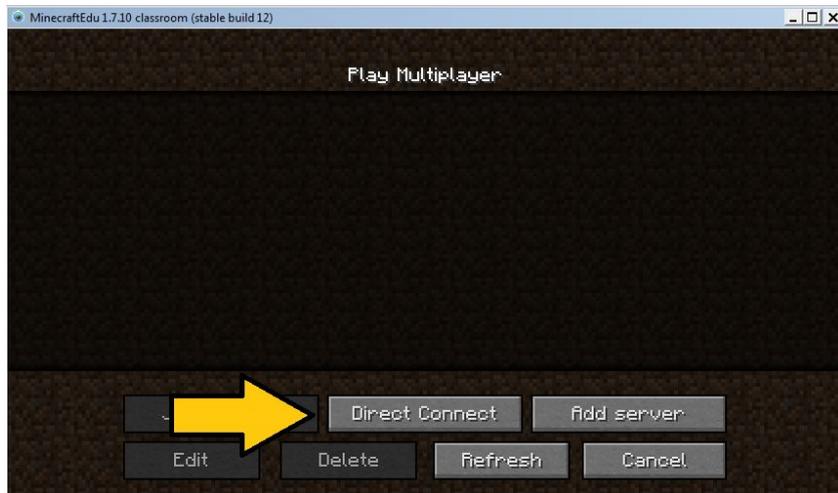
Step 2. Choose your player name (this should be your real name, so that your teacher can identify you in the Minecraft world) and select whether you are male or female.



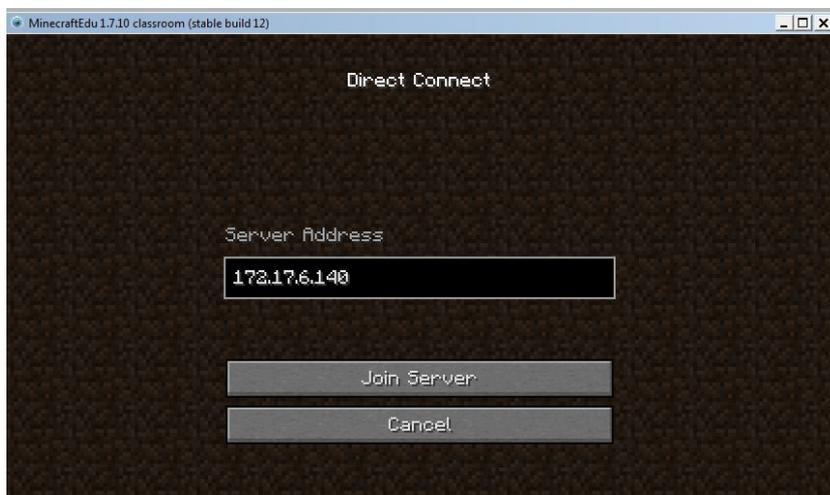
Step 3. Select 'Multiplayer'.



Step 4. Click 'Direct Connect'.



Step 5. Type in the Server number that your teacher has written on the whiteboard.



Activity

Once students enter the Minecraft world, they should get started straightaway with the task of building their city. This should last three lessons.

Some students may need extra support with learning how to use the controls. For these students, show them the basic controls to move around and select blocks for building.

MinecraftEdu Controls

Drop Item in Hand (Q) Movement (W) Open Backpack (Inventory) (E) Type Commands Or Talk (T)

Crouch / Walk Carefully (Shift) Jump / Climb (Space)

Dig or Break (Left Mouse Button) Switch Items (Middle Mouse Button) Place Block or Interact (Right Mouse Button) Look Arc (Mouse Wheel)

Student Commands: "M"
 - Teleportation
 - View Assignments

Teacher Commands: "M"
 - Player Settings
 - World Settings
 - Set Assignments
 - Building Tools

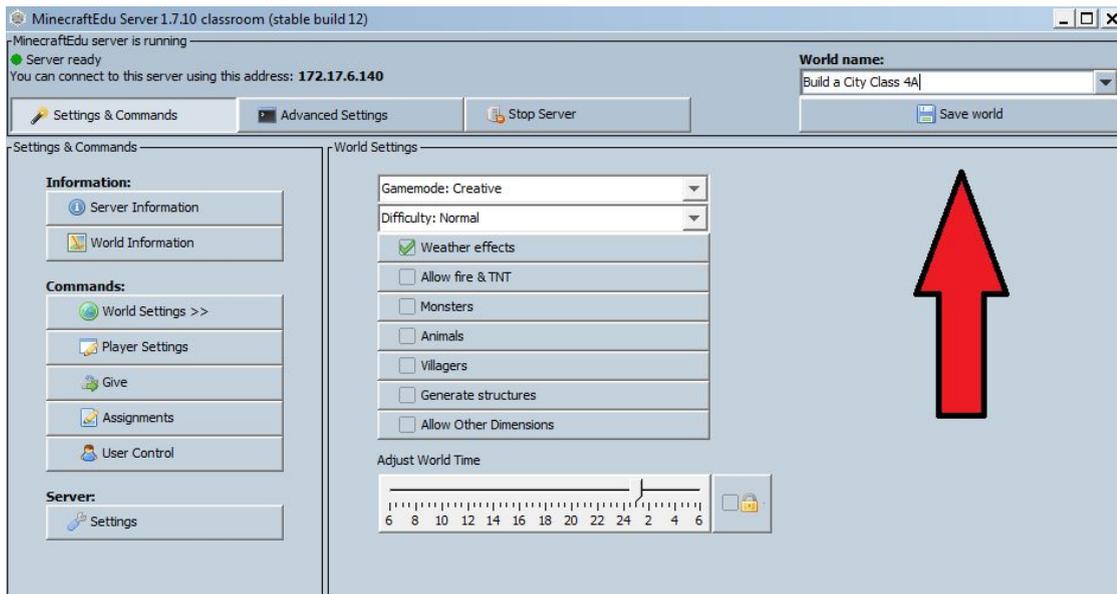
Show map: "X"
 Map options: "N"
 Quit: "ESC"

As a teacher, you can fly around the world to monitor students' progress.





Before quitting Minecraft and closing the server, make sure that you save the Minecraft game from the Minecraft server window.



Plenary

Before finishing this Build a City project in Minecraft, students should take screenshots of their Minecraft world in order to upload to their digital portfolio.

Lesson 6 - Explore and take screenshots of a city in Minecraft

Introduction

In this lesson, students will explore a readymade city. From the MinecraftEdu launcher window, click 'Saved worlds' and click 'Typical City'. Explain to students that they will need to take at least five different screenshots in this city to record different types of buildings according to the following five categories:

Commercial

Industrial

Municipal

Public Services

Residential

Each screenshot should then be uploaded to the student's digital portfolio. They should also consider how environmentally friendly the city is. Show students an example of one made earlier:

Commercial - Shopping Mall



Industrial - Factory



Municipal - City Hall



Public Services - Hospital



Residential - House



Activity

Students explore the city you have loaded and take screenshots as explained in the introduction. As an extension, students can construct additional buildings.

Optional:

As a fun exit point activity, explain that students will need to fortify their city against a zombie attack. They will have just 10 minutes to build their fortifications and protect the city after which time you will change the game mode from creative to survival.

Plenary

Discuss which screenshots the students had taken. Check that everyone was able to correctly identify the different types of buildings in the city according to the five categories: commercial, industrial, public services, municipal and residential. Discuss how the city could be made more environmentally friendly.