



Chapter 3: Construction

Aims

- To use Minecraft to show innovative solutions to a multifunctional urban structure.
- To develop skills in collaboration.
- To gain an understanding of the professions that work together to create a complete construction.
- To give an understanding of the factors taken into account, and the criteria that must be met, when creating a new urban space

Lesson Overview

In this chapter, the groups visit a construction site where they will produce a building from scratch. The work in Minecraft is meant to reflect, as far as possible, the processes that a real construction project would undergo. In order to illustrate this working procedure, the students can find inspiration at the site goconstruct.org, where they can see the various roles and phases that are involved in the creation of a building.

The teacher simplifies these phases to match a Minecraft context, and introduces the five stages that the group must use as the framework for their production. These are:

- Design and planning (off game)
- Foundation
- Basic structure
- Facades
- Detailing

When these have been described, the class is introduced to three constraints that they must take account of when they begin:

- The building must take into account people on street level and provide attractive facilities such as shops, entertainment facilities and play areas.
- The building must provide the framework for an attractive working environment which allows for a flexible workspace.
- The building must make use of its height, and must have at least five storeys.

Before (2 - 3 hours)

1. Introduction to construction: The students gain a deeper insight into the complexity of a construction project through the site goconstruct.org.
2. On this basis, the students in the group discuss where they see themselves in a construction project, and then try to translate this into the work with Minecraft.
3. The teacher provides a basis for the construction challenge the groups must solve. The students are given three constraints that must serve as a common thread in their solution:
 - The building must take into account people on street level and provide attractive facilities such as shops, entertainment facilities and play areas.
 - The building must provide the framework for an attractive working environment which allows for a flexible workspace.
 - The building must make use of its height, and must have at least five storeys.
4. As inspiration, the groups can study these cases: 8house, Bjerget, Superkilen. [See student / teacher resources](#)
5. The groups are given the specifications for their building site via ciobmc.org, and print out templates as necessary.
6. The groups begin to design their building with pencil and paper, and possibly various materials such as lego blocks, centicubes and manifold paper.
7. The groups must present their plans to each other. Here residents are given the opportunity to give critique and feedback on the plan. This can be organized as a presentation for the whole class or a group to group exercise.
8. The groups take note of the different inputs and revise their plan.
9. The teacher makes it clear to all which stages must be followed during construction:
 - Phase 1: Preparation of the site, establishment of a foundation/basement level.
 - Phase 2: Basic structure, establishment of the outline and edges of the building.
 - Phase 3: Facades: The basic structure is filled out with horizontal and vertical surfaces.
 - Phase 4: Detailing: The fixtures, vegetation and urban space around the building are worked on.

In game (3 - 4 hours)

1. The groups log in to Minecraft and find their way to their construction site.
2. Phase 1 (45 min): The groups prepare their sites for construction and possibly establish a basement storey. The teacher pauses the game and asks the students to document this phase.
3. Phase 2 (60 min): The teacher outlines the goal for the next phase, and allows the groups to begin work again. It is important that the students understand the importance of not producing surfaces, but only working on the outline. The teacher pauses the game and asks the students to document the finished outline.

4. Phase 3 (60 min): The teacher outlines the goal for the next phase, in which the students must choose the materials and fill out all the surfaces. The teacher pauses the game and asks the students to document their work.
5. Phase 4: (60 min): The teacher outlines the goal for this stage and emphasises that the building's link to the public space is the primary task to be solved. The challenge for the groups here will be to prioritise between the necessary and the cosmetic details. When the time is up, the teacher pauses the game and asks the students to document their work.

After (1 - 2 hours)

1. The groups prepare their presentations, in which they reply to the following questions:
 - What have you built?
 - How have you built it? (Show pictures from the documentation of the progression.)
 - Why did you build it like this?
 - How does your building interact with the urban space?
 - How does your building create quality for all citizens of the city?
 - Did you adhere to your plan? Why / Why not?
 - What went well/badly in your teamwork? How could this be improved next time?
2. The teacher summarises the students' work and links it to the constraints under which the students have been working.

Evidence of Learning

- The pupil shows an understanding of multifunctional construction in a virtual model.
- The student can demonstrate knowledge of the phases of a construction process.
- The student can reflect on and assess the quality of teamwork in a joint project.