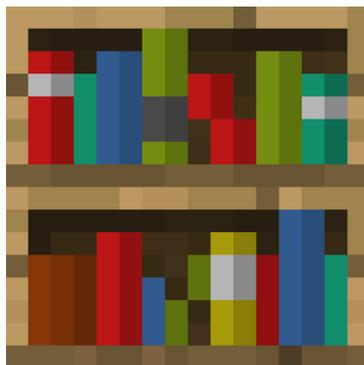


# MINECRAFT: EDUCATION EDITION

## User Manual



Nina Žibert

Digital School d.o.o.

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## General information

### What is Minecraft?

Minecraft is a computer game, in which the player is set in a randomly generated world. It is an open world game, which means that the player can do whatever they want in the world. They are not limited by rules or non-playable characters. Each element of the game is made up of blocks that represent different types of materials, such as water, rocks, lava, grass or fire. Players can gather blocks by chopping trees, mining ore, picking up items, etc. Blocks can be placed, destroyed or transformed into different materials. Players can make various types of tools or weapons, which can be used for building or combat. Minecraft is suitable for elementary school students of all ages.

Minecraft encourages creativity, cooperation, and problem solving in an immersive environment. The only limit is your imagination and the imagination of your students. There is also a version called Minecraft: Education Edition, which is a version of Minecraft that is made to be used in education. It contains all the main elements of Minecraft that many of your students might already be familiar with, however, it also contains additional features, which facilitate learning and cooperation in a classroom

setting. The game offers teachers support, which allows them to efficiently incorporate different educational activities. With the Code Builder expansion, students can connect to other popular platforms such as Scratch, Tynker and MakeCode. The educational version is not available in Slovenian, however, some worlds are translated to the aforementioned language.

### **How to download and setup of the application**

First you need to download the educational version of the game and set it up on your device. The link for the download can be found on the official website for Minecraft: Education Edition: <https://education.minecraft.net/>

This is also where you can find additional information about the game, the pre-prepared material and worlds that can be used in class. In the tabs labelled “Community” and “Support”, you can find technical information and tips provided by other teachers.

1. Open the website <https://education.minecraft.net/get-started/download/>
2. The game is available on Windows operating systems, macOS and iOS. On the left side under the library icon you will see the suggested version of the game that is the most suitable for your operating system. Click the “Download now” button.
3. When the download is done, run the game.
4. A new window will pop up that will allow you to choose your language settings. The game is not available in Slovenian, however, we translated a couple of worlds and prepared them for you.
5. Follow the setup instructions.
6. When the application is set up it will automatically start up. If the application does not open on its own, you open it by double-clicking the icon of the bookshelf.

### **System Requirements**

Minecraft: Education Edition can be used on the following types of devices:

1. Computers with Windows operating systems,
2. Computers with macOS operating systems,
3. iPad tablets.

If you want to use the multiplayer mode, you also need an internet connection. If you want to host a multiplayer session, your broadband speed must be at least 1.5 Mbps.

### **Installing Minecraft: Education Edition on devices that use a Windows operating system**

1. Go to the website: <https://education.minecraft.net/get-started/download/>
2. Choose “Download now”.
3. A popup window will open and ask you if you want to install the application. Make sure that the option “Launch when ready” is checked. Click “Install”.
4. Wait for the application to finish installing.

5. After it has finished installing, the game will start up and ask you for your sign-in information. Sign in with your Office 365 account.
6. After successfully signing in you will be redirected to the home screen for Minecraft.

#### **Installing Minecraft: Education Edition on devices that use the macOS operating system**

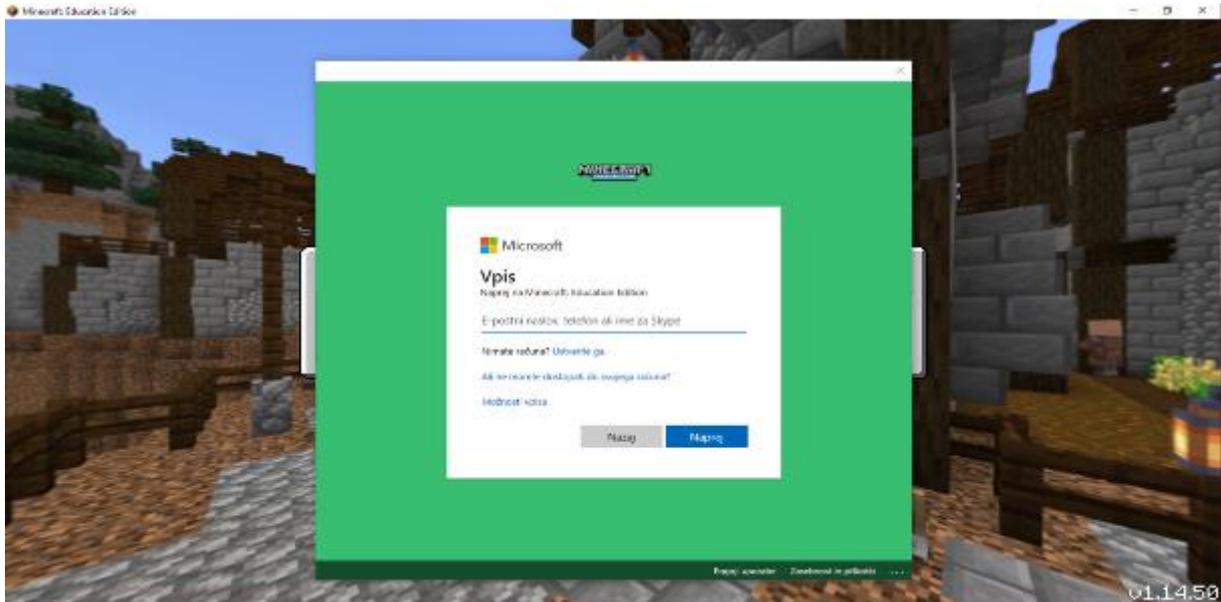
1. Open system settings.
2. Check whether your device is ready to install programmes by known developers. Click on “Security and privacy”, then click the tab named “general” and make sure, that the field “Allow apps downloaded from Mac App Store and recognized developers” has a checkmark. If this option is disabled, the user with admin rights needs to enable it before installing the game.
3. Go to the website <https://education.minecraft.net/get-started/download/>
4. Choose “Download now”.
5. Open the downloaded file, drag the icon of Minecraft: Education Edition to the folder named “Applications”.
6. Open Minecraft: Education Edition. If your system asks you for permission, confirm it by clicking the “Open” Button.
7. After running the game executable choose “Sign in” and sign in with your Office 365 account.
8. After successfully signing in you will be redirected to the home screen for Minecraft.

#### **Installing Minecraft: Education Edition on iPad devices**

1. Open the App Store.
2. Search for the Minecraft: Education Edition app.
3. Click on the button to download the application and wait for it to finish installing.
4. Click on the “Open” button.
5. When the game asks for your sign-in information, sign in with your Office 365 account.
6. After successfully signing in, you will be redirected to the home screen for Minecraft.

## User accounts

To sign in to the game, you need a user account that allows you to sign in to the Microsoft 365 services. An account is available to both teachers and students at school. In case you don't have access to this account, contact your local Microsoft representative.



## Why Minecraft: Education Edition?

Minecraft: Education Edition is not just a game, it is also a tool for teaching and studying. It offers teachers the unique opportunity to introduce elements of play into the learning process.

### Cooperation and communication

Minecraft: Education Edition is set up so that the students can problem solve in smaller groups or in a class setting. Group work in this kind of an environment allows students to improve their cooperation and communication skills.

### Creativity and critical thinking

Students learn naturally through observation and trial and error. The game provides them with the freedom to use independent thought and allows them to try out different approaches to problem solving. As in real life, the game does not come with instructions that would lead them straight to the solution. Students need to solve the problem on their own, which typically requires multiple attempts. When they make a mistake they can use it as a learning experience and keep trying, until they reach their desired goal.

### Inclusivity

If the teacher wants to create an inclusive class, they must prepare activities that are tailored to different kids. These activities provide them with the opportunity to learn in different ways and at different speeds. Modern pedagogics promote learning that provides the students with a sense of accomplishment, and at the same time offers them opportunities to show off and use their knowledge. The educational version of Minecraft can be used by teachers to put together projects and activities that guide the students to specific goals. This facilitates the realisation of the prescribed curriculum.

### **What does the science say?**

A Canadian study has shown that the use of known and popular settings in education, such as Minecraft, has many benefits for the students:

1. higher motivation to learn,
2. better communication,
3. better knowledge of information technology,
4. better perception of your own academic efficacy,
5. developing your independence.

Seymour Papert, an expert in the field of education, discovered in his research, that the effect of studying is better when:

1. students use technical learning tools and computer-generated environments,
2. students take on the active role of a designer or a builder,
3. students learn in a social environment with mentors, trainers, or through networks,
4. students learn through play.

The human brain tends to make learning enjoyable, when people explore and find new ways to reach set goals. When students use Minecraft: Education Edition they learn:

1. how to solve problems,
2. how to prevent potential problems from occurring,
3. how to find help and information from their classmates, teachers, or the online Minecraft Wiki,
4. how to use critical thinking when designing new builds.

### **Growth mindset**

Studies (<http://www.dlib.si/details/URN:NBN:SI:doc-B6NOTLPM> ) have shown that the students who have a greater growth mindset typically have better learning outcomes and a better learning self-image compared to students with a fixed mindset. Children with a fixed mindset think that their capabilities are fixed in stone and unchangeable. This can lead to feelings of inadequacy when faced with new challenges, and a diminished motivation to learn. When talking about growth mindsets we refer to kids who believe that they can develop their capabilities and improve them through practice and effort. Kids who think this way are often more motivated to problem solve and more likely to choose tasks that help them improve their learning capabilities.

### **How can Minecraft: Education Edition influence the growth mindset?**

Students with a growth mindset don't see failure as an obstacle. They see it as an opportunity to grow and learn. Carol Dweck, one of the leading researchers in the field of motivation ([http://osazilb1.splet.arnes.si/files/2018/03/RAZVIJANJE-MISELNE-NARAVNANOSTIRASTI\\_splet.pdf](http://osazilb1.splet.arnes.si/files/2018/03/RAZVIJANJE-MISELNE-NARAVNANOSTIRASTI_splet.pdf) ) has said in an interview:

“Students who are mastery-oriented think about learning, not about proving how smart they are. When they experience a setback, they focus on effort and strategies instead of worrying that they are incompetent.”

Teachers can encourage their students to develop a growth mindset by helping them embrace the belief that they themselves can improve their capabilities.

Students are often more familiar with Minecraft and its mechanics than the teachers, but don't let that discourage you. Your role is not to be an expert in Minecraft, but to lead a learning process: prepare the materials and help the students explore the new contents. The feeling that you're letting the kids learn on their own by taking advantage of their interest in play and their own capabilities, can be intimidating at first. But you shouldn't worry.

Of course, do not forget to learn alongside your students. Join them in the game world and help them create. The students should show you what they've been building and explain how they've built it. Ask them to share the tips and tricks about Minecraft that they've discovered with you and with the rest of the class. When you are unsure about how to do something, ask your students for help.

### Rules of engagement

Before using Minecraft: Education Edition it is important that you set the basic rules of cooperation.

Creating a positive learning environment in the class is crucial, especially when the students are introduced to new learning processes. Students need to feel secure enough to risk facing a challenge that they might not solve on their first try. They shouldn't be scared to fail. They should have the courage to try again in a non-judgemental and understanding environment.

Clear-set expectations and class rules will help your students to communicate and participate in online learning processes.

Even though using the game in class may seem chaotic, it needs to follow four main guidelines that are important for interpersonal relationships and learning through play:

1. all the usual rules for conducting classes are still valid,
2. the students are given different roles,
3. you participate as a moderator,
4. at the end of the lesson, set aside some time for feedback and reflection.

### Setting learning objectives

When you choose to use Minecraft, do not forget to set your lesson goals. A clear definition of your learning objectives will help you link all the tasks that your students will be completing within the game. You do not need to adjust your curriculum to use Minecraft. You should try to use Minecraft for topics that happen to match the activities that the game provides. You can use teaching in Minecraft as an activity that adds some excitement to your lessons. This way you build an interest in specific topics and create a more comfortable learning environment.

In general, kids tend to see studying as a boring and monotonous activity. You've surely all faced the challenge of presenting a topic in a way that the students find interesting. Learning through play enables students to have a detailed and personalized learning experience. This individualised approach is crucial if you want your pre-planned lesson to have a greater impact.

## Resources for teachers

Teachers can access pre-prepared materials, lesson plans, and worlds on this website: [education.minecraft.net](http://education.minecraft.net)

In the “Class resources” tab, you can find several types of materials. In the “Subject kits” tab, you can find pre-prepared lessons. The contents of this tab are divided into several topics, such as language arts, science, history and culture, computer science, math, and art and design.

Each of these topics contains several units. Most of the units’ websites also list the learning objectives and provide you with sample questions. These help you with your lesson. You can use the ideas and suggestions for activities that your students participate in. On the right side, there is a button that lets you download the world. Once the world has been downloaded, you need to import it into your game. The unit’s website also includes other content such as worksheets and additional materials. It should list all the competencies that the kids will be developing.

In the “Subject kits” tab, you can find a browser that lets you sort all the learning units by using specific parameters that are relevant to you. You can type in specific key words that are connected to your desired topics. You can select the kids’ age, and the subject that you are interested in.

On the website you can find technical support, and support provided by other teachers who use Minecraft in class. You can find more information about this topic in the “Help and support” section.

## Tips for using Minecraft in the classroom

1. Don’t be afraid to learn from your students.

Accept that it’s impossible to be omniscient. There will come a time when your students know more than you, especially when it comes to the game. Be ready to learn and ask your students for assistance.

2. Allow yourself to take some time to reflect.

In each lesson, it is important that your students have the time to reflect on the things that went well and the things that they could improve on next time.

3. Do not overdo it.

You do not have to include Minecraft in every single lesson. You do not want to reduce the effect that the game has on your students’ motivation.

4. Set clear expectations.

The concept of learning through play may be as new to your students as it is to you. Share your expectations with your students. Make sure that the people who are in charge of the school, the students, and their parents understand why Minecraft is being used in the classroom.

5. Set some ground rules.

When students think about playing games at school they can get overly excited. It is good to set some ground rules. You can make a list of rules and the consequences of breaking the said rules together with your students. This lets kids express their opinions and have a say in their own learning process. At the same time, it teaches them how to make decisions and face the consequences of their actions.

6. Give your students some freedom.

If you want your students to have an authentic Minecraft learning experience, they should be allowed to make attempts and to solve the tasks on their own. Let them make mistakes and make sure they know that it is acceptable to make mistakes, as long as they learn from them.

### **Using the Classroom mode companion application**

Whenever you as a teacher host a multiplayer session of the game, Classroom mode offers you several opportunities to interact with your students. The game can be controlled using the settings located in the main user interface.

Teachers can simultaneously use both MEE and the Classroom mode application. Students can use their MEE account to sign in and join the multiplayer game. They can also use the Code Builder update. Teachers cannot use all three functionalities at once.

Installing Classroom mode

1. Go to the website <https://education.minecraft.net/get-started/download/> Click the link to download the version of the application that will work on your operating system. The link is located at the bottom of the page.
2. Open the downloaded file and follow the instructions to install it.

### **Using multiple instances of Classroom mode**

If the teacher wants to use several multiplayer games at once, they can open multiple instances of the Classroom mode application. You need one instance of Classroom mode per multiplayer game.

1. Restart the Classroom mode application.
2. Sign in with your account.
3. From the list of servers, choose the multiplayer game you want to join. If you can't see the game on the list, join the waiting room and ask the host of the game to type `"/connect"` into the command line.
4. For each additional use of the application, repeat the steps listed above.

### **Controlling the game settings**

The Classroom mode application enables you to toggle different game options that influence the game world.

- PAUSE - pauses the game for each player within a chosen multiplayer world (default setting: off)
- CHAT – allows the players within the world to communicate with each other by using a chat client (default setting: off)
- PERFECT WEATHER – disables weather effects such as rain, snow or storms (default setting: off)

- ALLOW MOBS – mobs are living moving beings found within Minecraft worlds. This includes friendly characters (animals and villagers) as well as enemies (zombies, skeletons, etc.). (default setting: on)
- ALLOW DESTRUCTIVE ITEMS – Players can use destructive blocks such as TNT blocks. You can limit the potential damage to your world by using deny, allow, and border blocks. (default setting: on)
- ALLOW PLAYERS TO TAKE DAMAGE – Players can take damage in an unsafe environment, enemy characters can cause damage to players. (default setting: on)
- WORLD MODIFICATION – Players can change what the world looks like, and they can control the NPCs. (default setting: off)
- ALLOW PLAYERS TO DAMAGE EACHOTHER – Players can damage each other either intentionally or by accident. (default setting: on)

On the right side of the user interface you will see two information windows. The player roster also includes a list of players which are colour coded. Each player has his or her own colour that is displayed on the map.

Beneath the player roster there is a window that displays the online chat, if the chat is enabled. This is where you can see the player names, which are displayed in their set colour.

On the left side you can locate the world map. You can zoom in by using your mouse wheel. Above the map there are the X, Y, and Z coordinates, which show the current location of your pointer. The areas that are black on the map are the areas that have not been loaded or that the players have not explored. They will be displayed only when the players visit them.

### **Communicate with your students**

As a teacher you can use the chat line to enter text or commands, which lets you communicate with your students and manage your world. The chat log is saved locally to your computer in this folder: Documents\Minecraft Education Edition\ChatLogs

### **Teleport students**

As a teacher, you can teleport your students within the world. Right clicking the map allows you to move all the players to a specific location. You can teleport them individually, by dragging their icons to a specific location, or you can use the command “/tp” combined with the player name and the chosen location.

## Menus

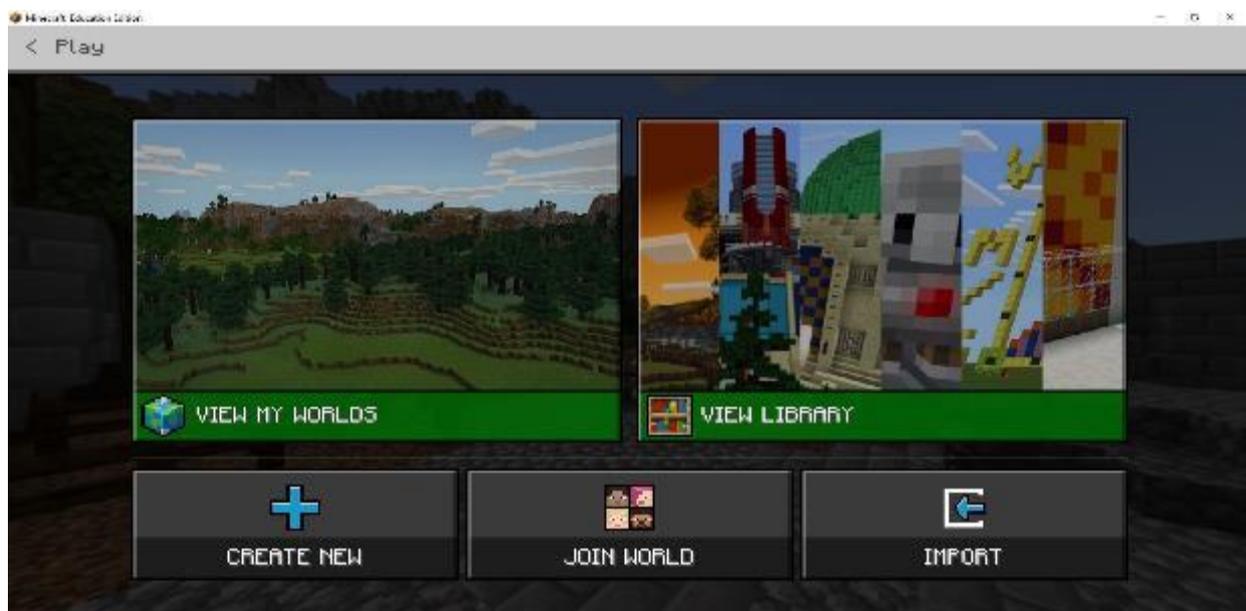
After signing in to Minecraft: Education Edition, you will see the main menu with the following options: Play, Hour of Code, Settings, and Switch accounts. You will also see a clothing hanger icon and a help icon.



## Play

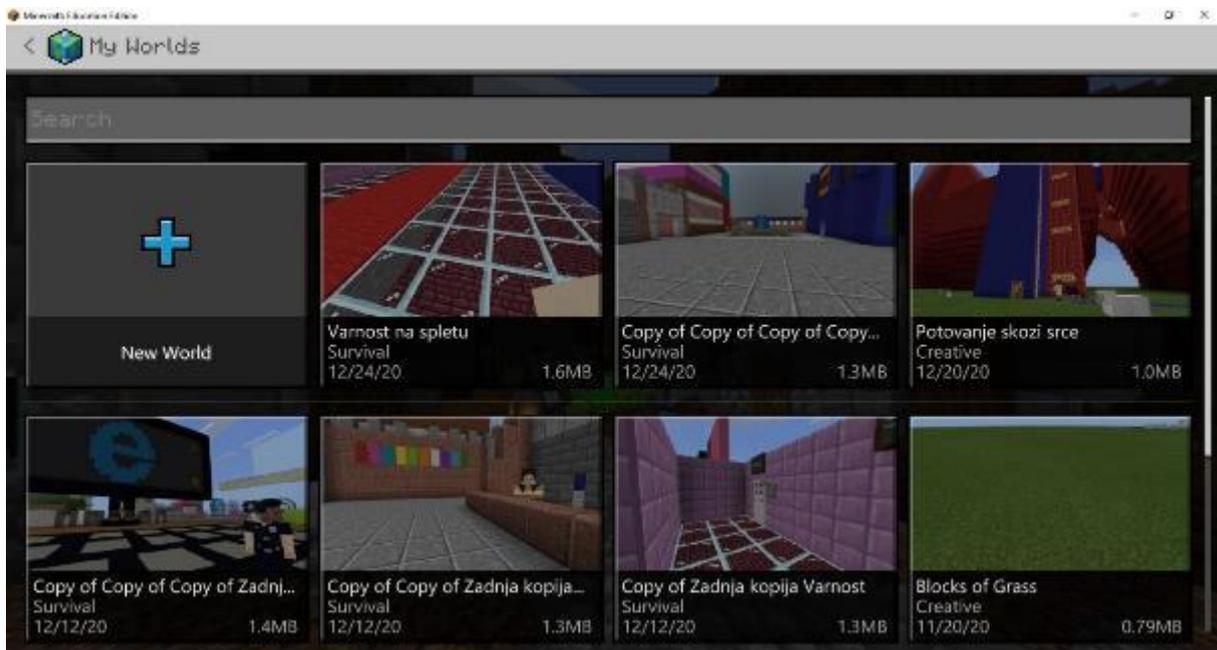
Clicking "Play" opens a new menu, which contains the following options:

- View my worlds,
- View library,
- Create new,
- Join world,
- Import.



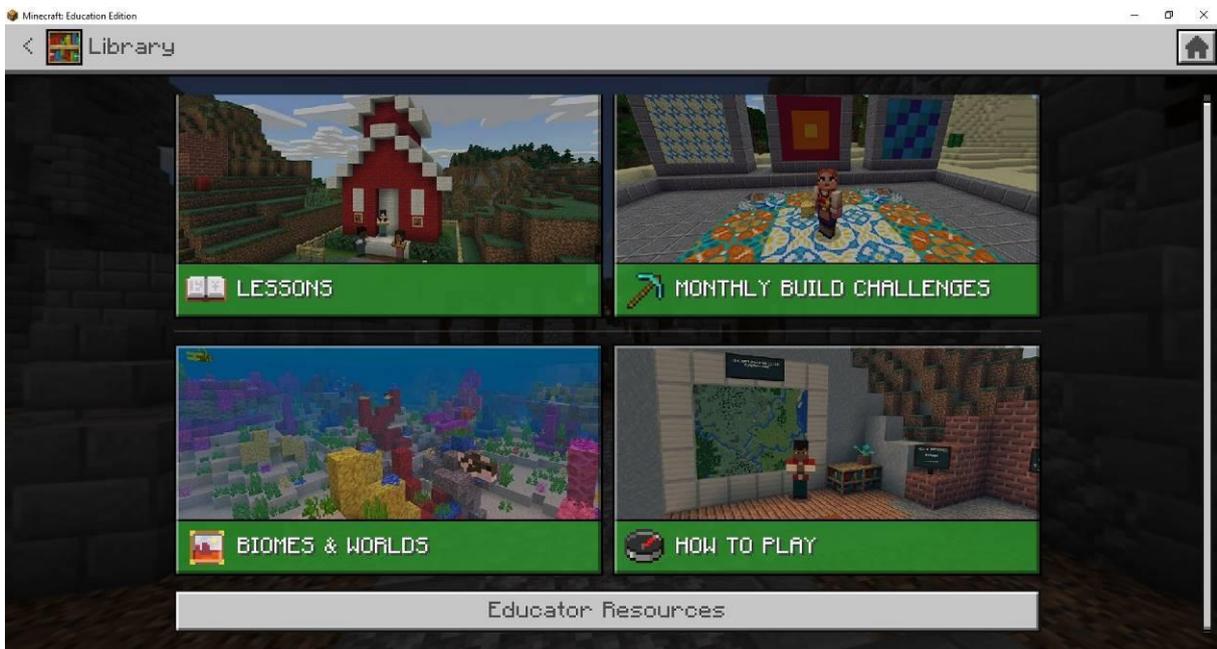
## View my worlds

In this menu, you can access the search bar, the “New World” button, which lets you create a new world, and a list of all the worlds that you’ve played in the past. In case you’re playing for the first time, the menu will show you only the “New world” option. If your list contains a large number of worlds, you can enter some key words into your search bar. These usually include world names. This allows you to sort through the list and find the world that you are looking for.



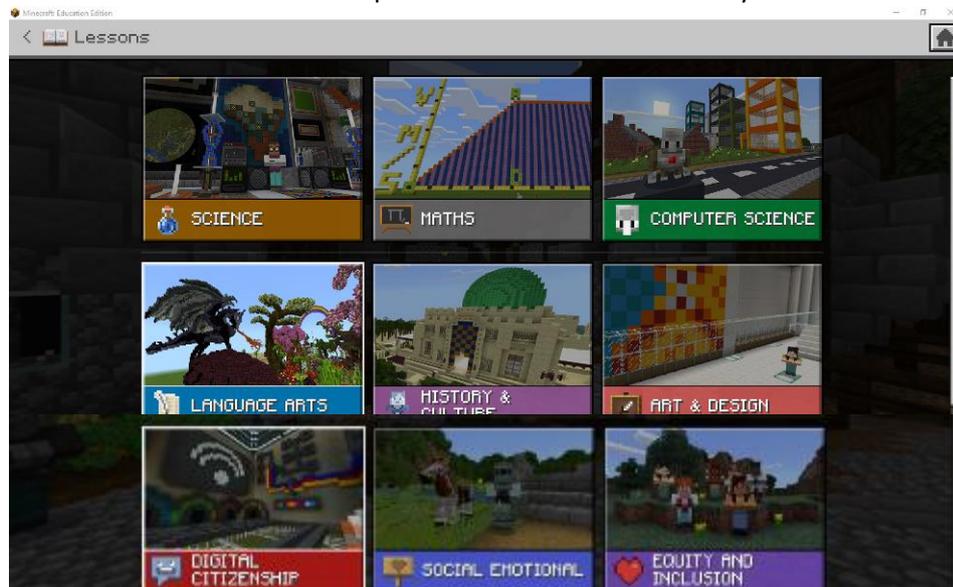
## View Library

The library contains all the existing worlds that you can use in class. The library is separated into four sections.



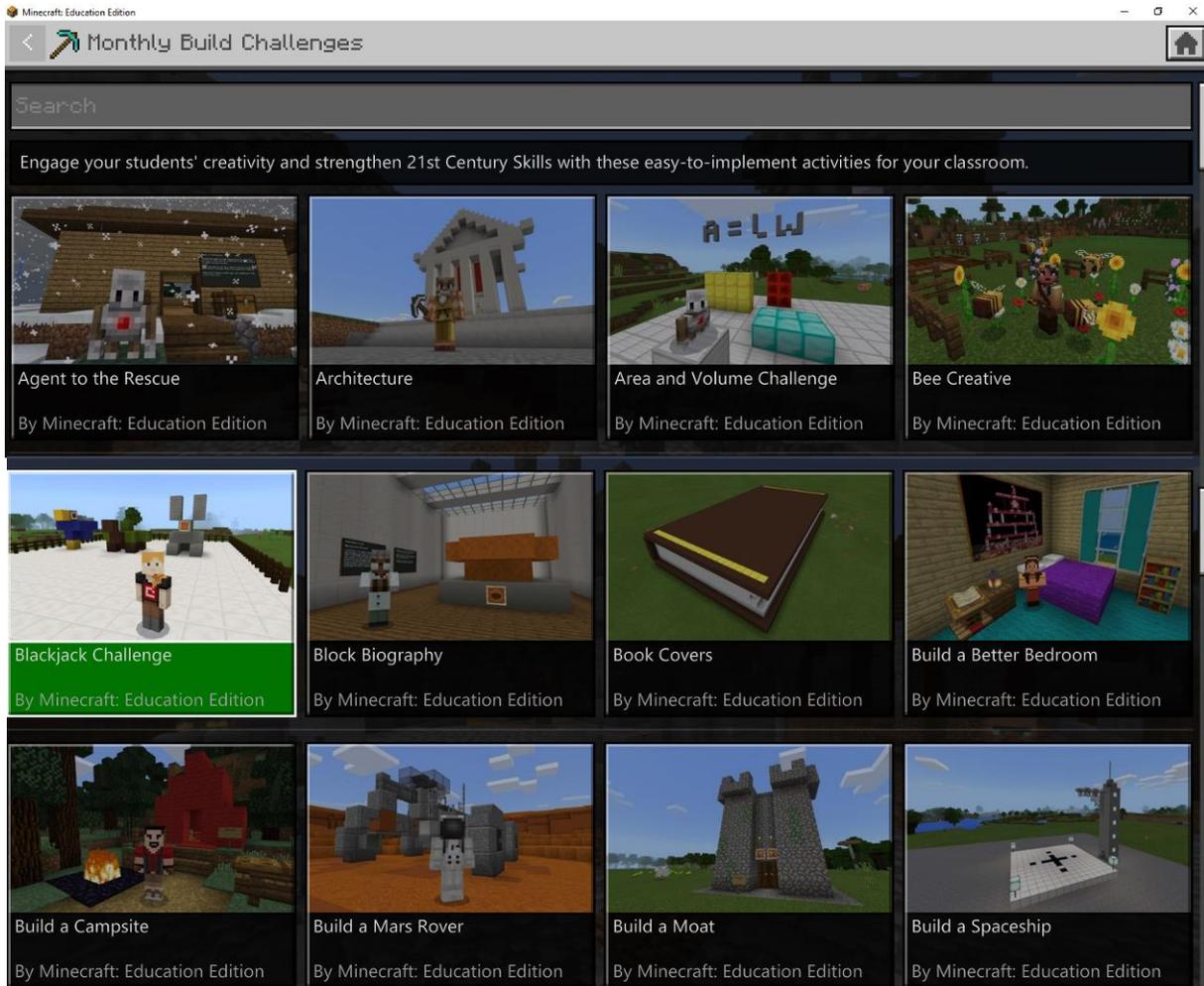
## Lessons

This section contains lessons which are sorted by subject, such as Science, Math, Computer Science, Language Arts, History & Culture, Digital Citizenship, Social Emotional, and Equity and Inclusion. Each of these sections contains sample worlds that can be used in your lessons.

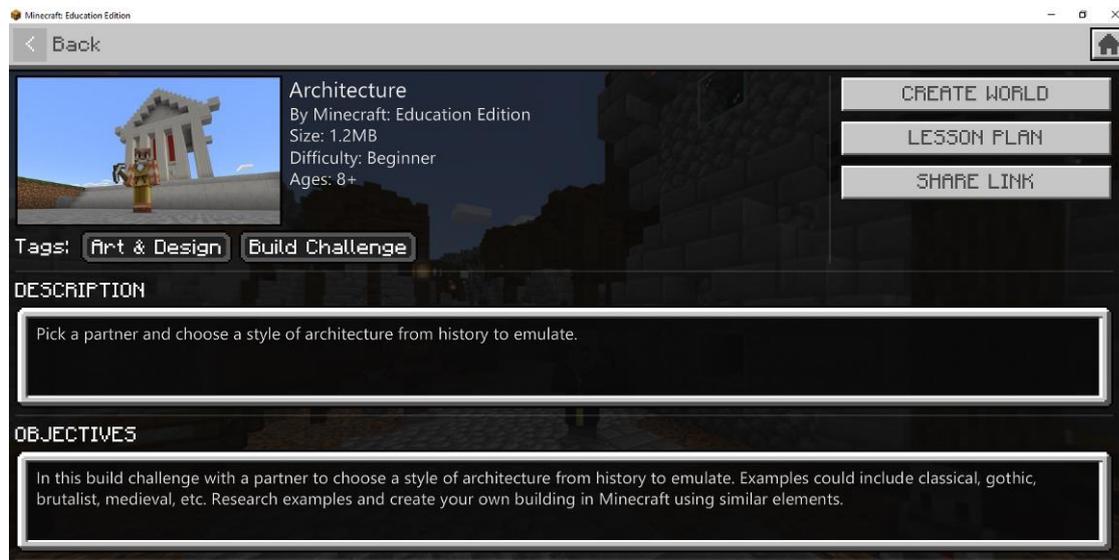


## Monthly build challenges

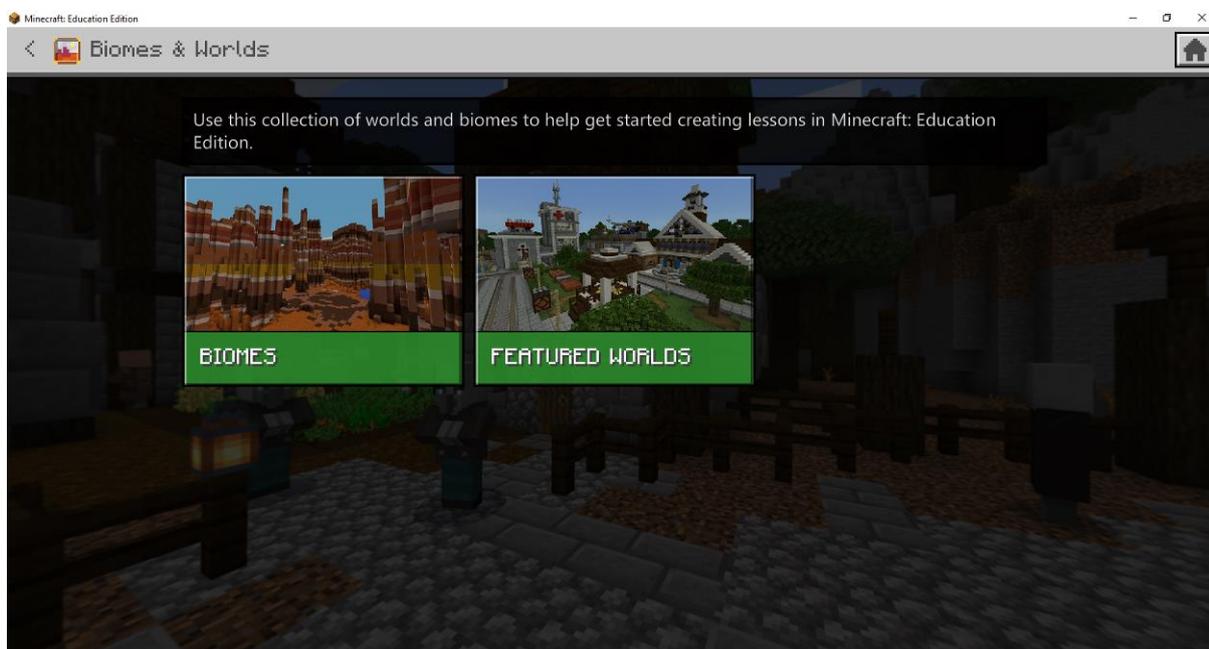
This section contains the worlds that are dedicated to monthly build challenges. This includes an extensive list of worlds and prepared lessons that can be used in class.



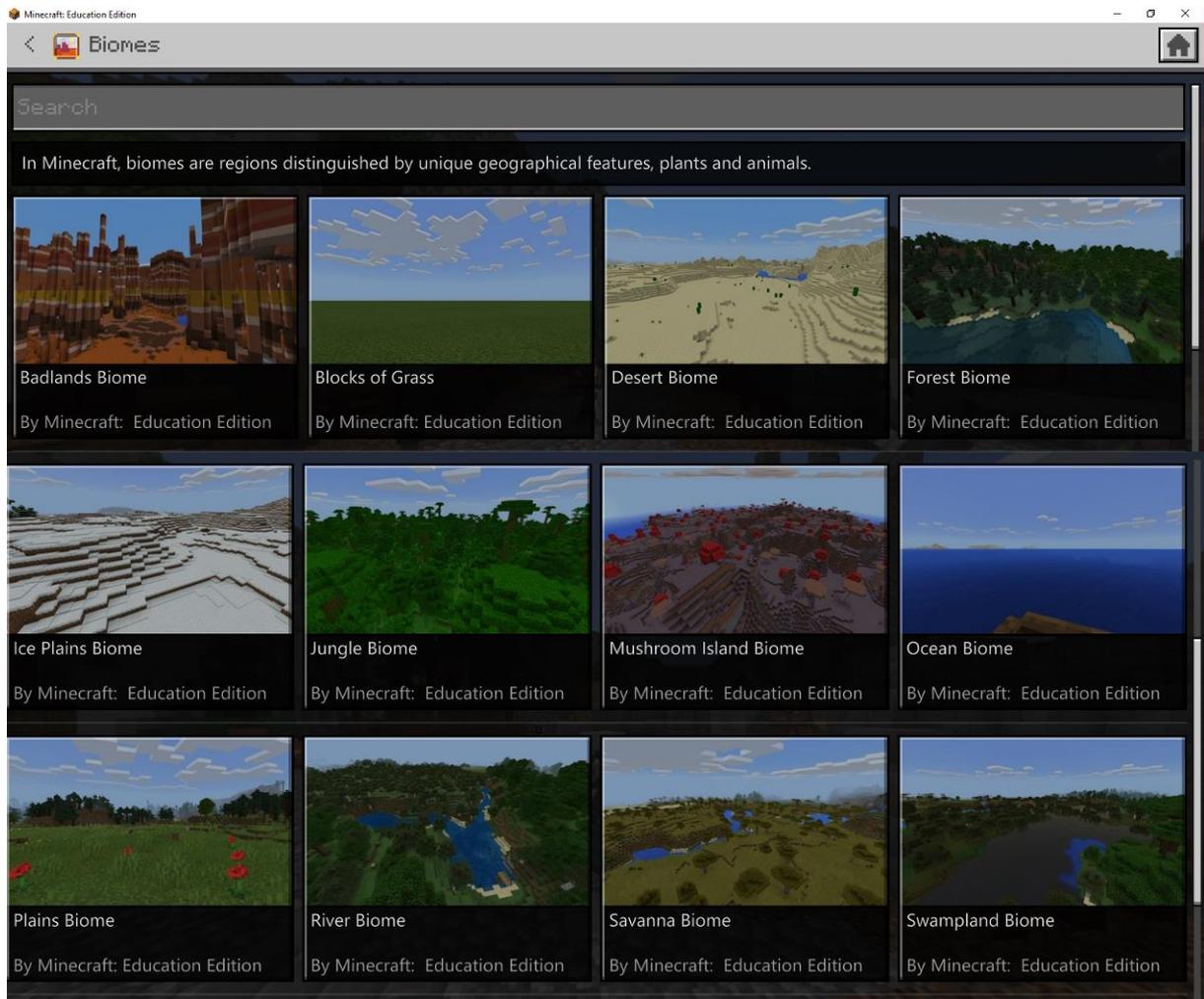
Clicking on the world shows you a detailed description of the world, the main objectives of the lesson, and potential additional tasks for the fastest of your students. These worlds can be used whenever you desire, they are not tied to the time limits of the build challenge.



## Biomes and worlds

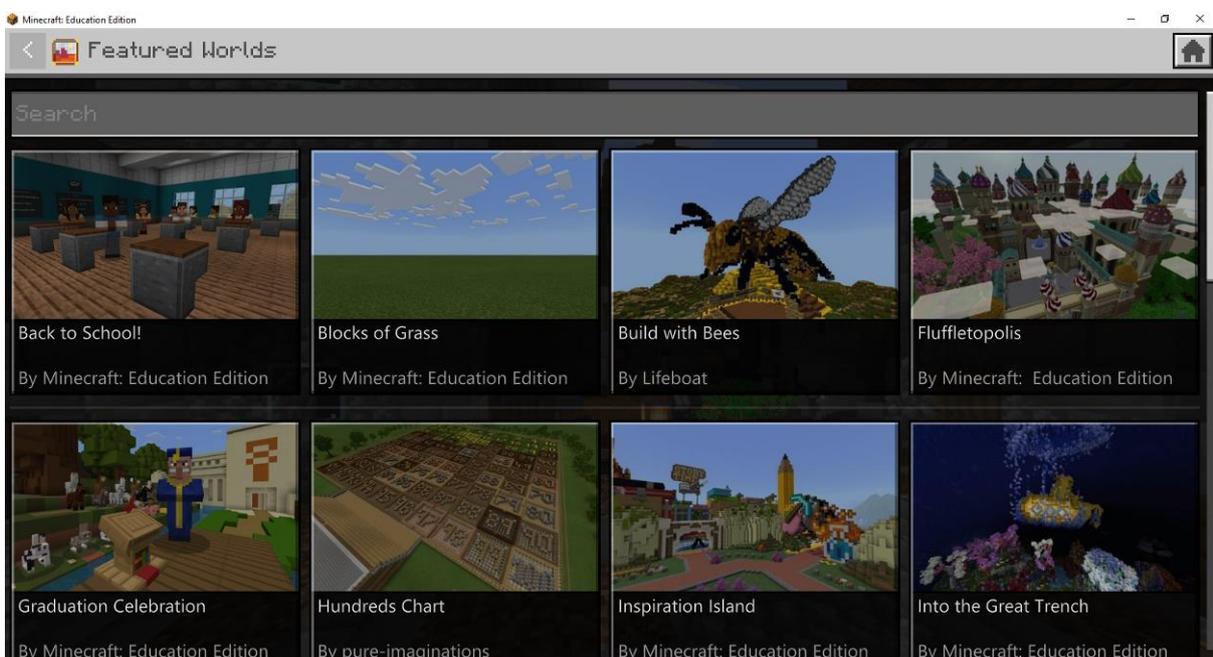


This section contains world templates which can be used to build a personalised world. Before getting started, you should always set the objectives for your lesson or the Minecraft world that you are trying to create. You should modify your settings based on those goals. When you choose the option "Create New World", you do not get to choose which types of biomes will be generated. You are provided with a world with randomly generated biomes. Biomes are different regions that have distinct geographical features, flora and fauna. In the "Biomes" menu you will find 15 different regions. Most worlds are diverse, with the exception of the world called "Blocks of grass", which is made up entirely of grassy plains, with no other geographical features.



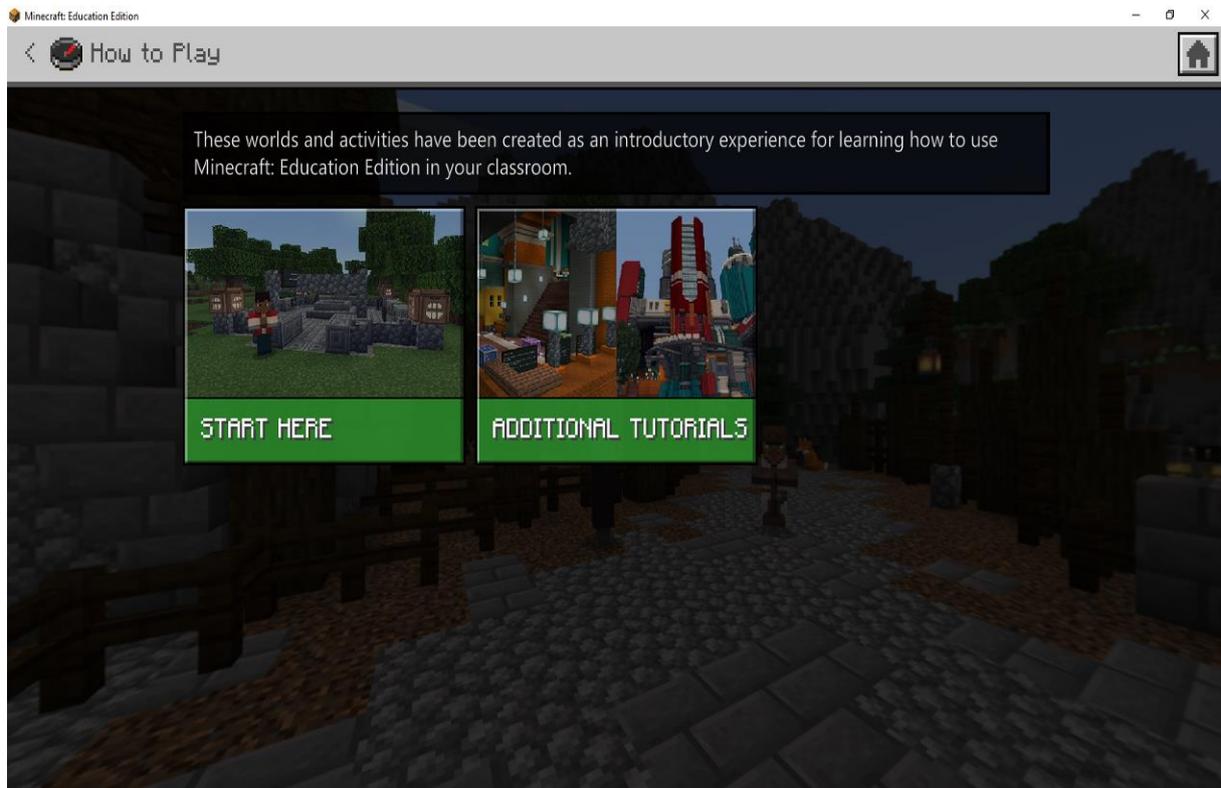
## Featured worlds

This section features pre-built worlds that can be used in class.

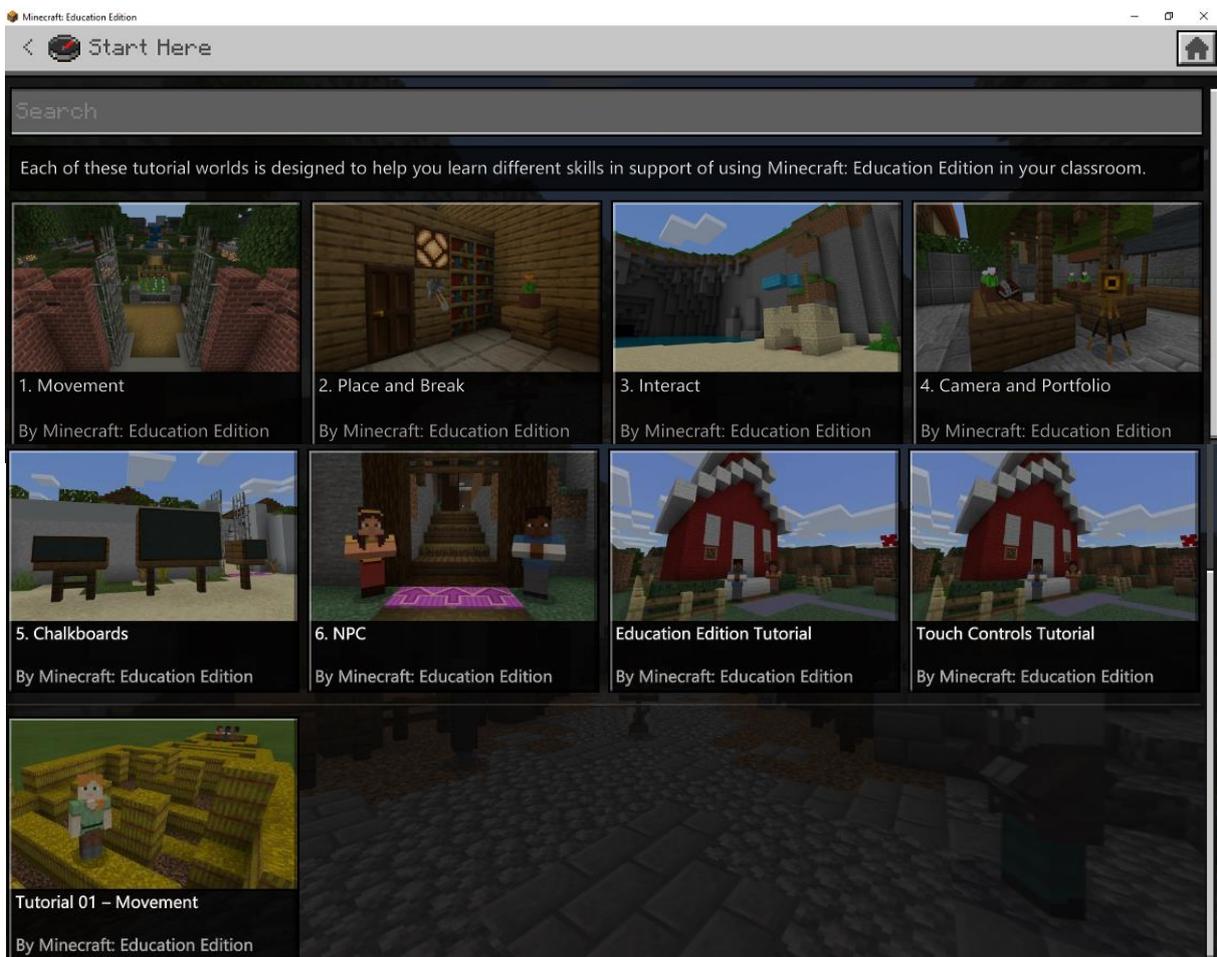


## How to play

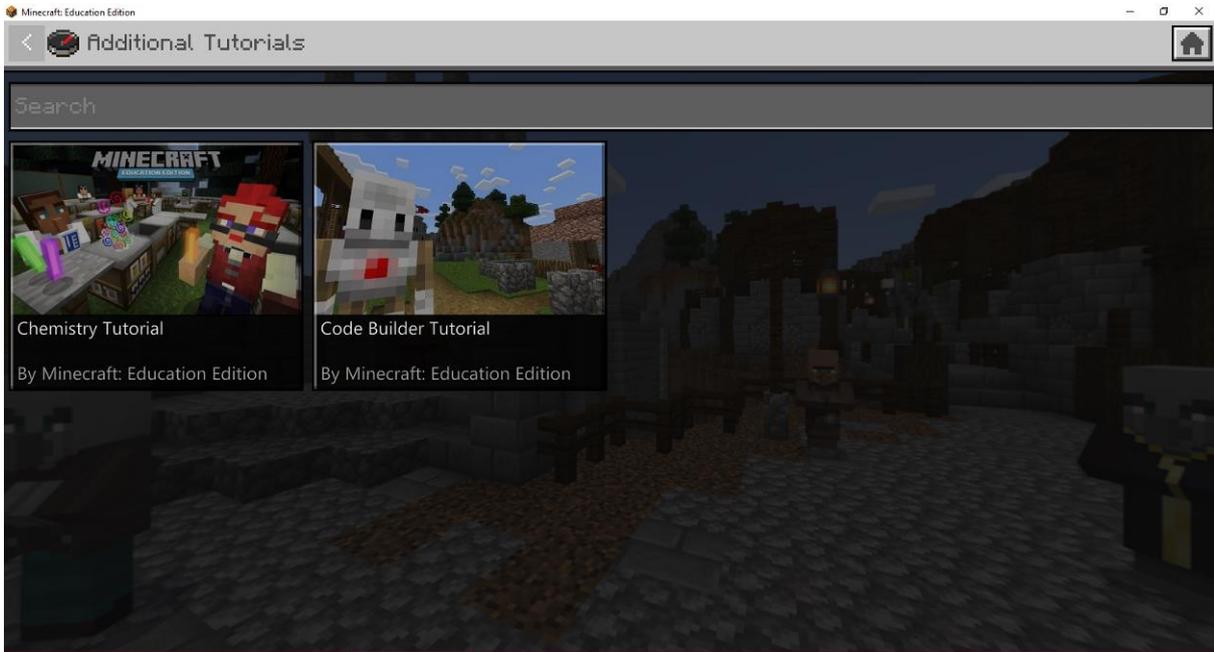
This section contains tutorials that can help you understand the game better.



The submenu "Start here" provides you with basic tutorials: movement, place and break, interact, camera and portfolio, chalkboards, and NPC.

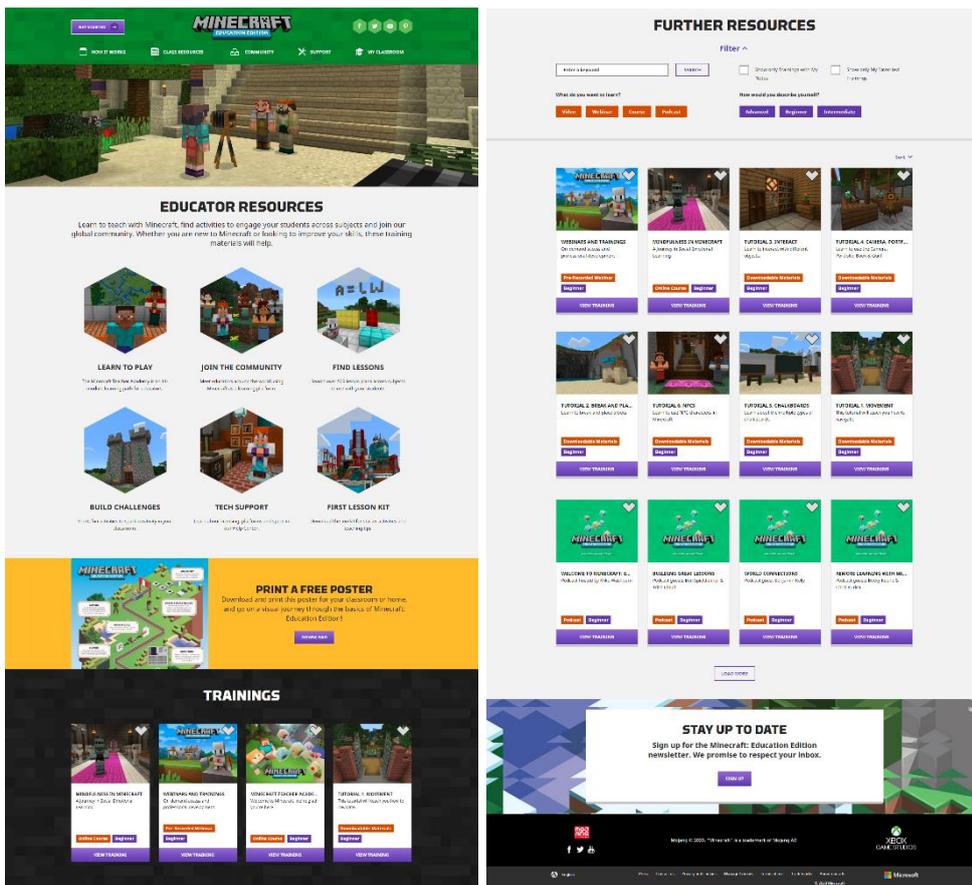


In the “Additional tutorials” submenu, you can find the Chemistry tutorial and the Code Builder Tutorial.



## Educator resources

Clicking this button redirects you to the official Minecraft: Education Edition website which contains additional resources for educators: <https://education.minecraft.net/class-resources/trainings/>

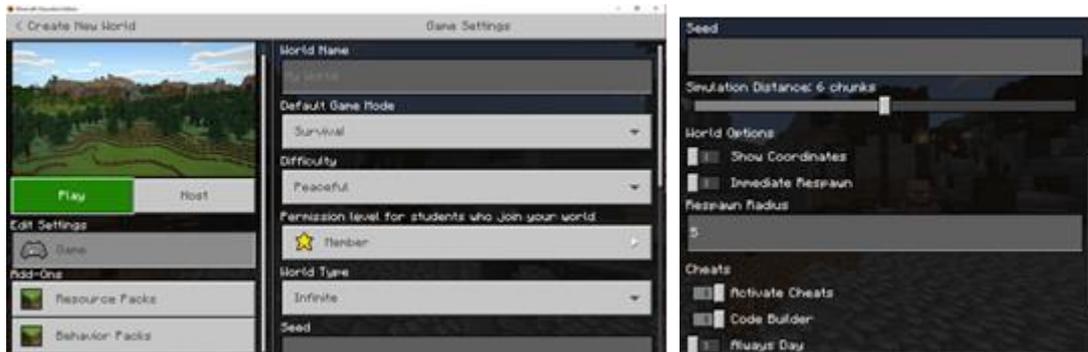


## Create new

Clicking “Create new” opens a window that lets you select whether you want to create an entirely new world or use a pre-made template of a world. Clicking the button “New” shows you the settings that you can adjust before creating a new world.



In the game settings menu, you can rename your world, select the game mode, and the difficulty of your world. You can change the permission level for the players and set the world seed. You can choose to show the coordinates and activate cheats, which allows you to use commands. Using the setting “Always day” means that it will always be daytime in your game. If you do not toggle this option, the game will cycle between daytime and night time every few minutes.



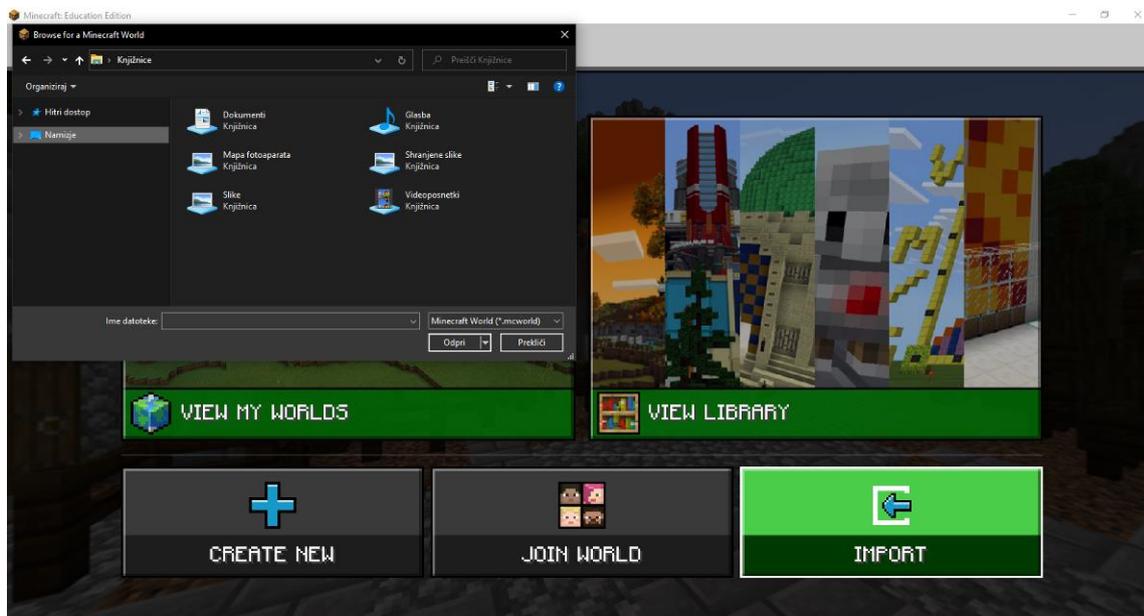
## Join world

Clicking this button starts the process of joining an existing multiplayer game.



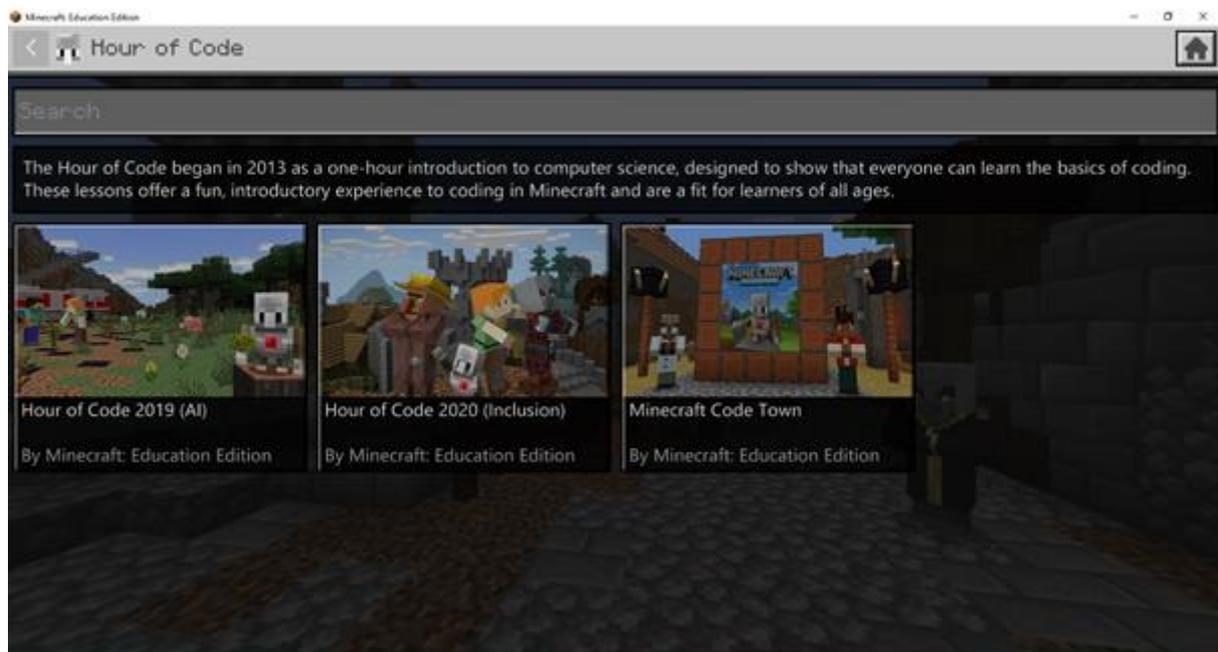
## Import

Minecraft: Education Edition allows you to import a world that is saved as a .mcworld file. Every file you download from the website [education.minecraft.net](https://education.minecraft.net) will be in this form, if it contains a world.



## Hour of Code

Since the 1.14.50 version update, the main menu contains a button called “Hour of Code”. This gives you access to three different worlds that can be used to teach the basic concepts of programming.



## Settings

This menu allows the player to change and adjust the settings that influence the gameplay in Minecraft. The settings, which can be toggled on or off by clicking a grey button, are enabled when the grey rectangle is on the right side. When the rectangle is on the left side, the setting is disabled.



## Keyboard and mouse hints

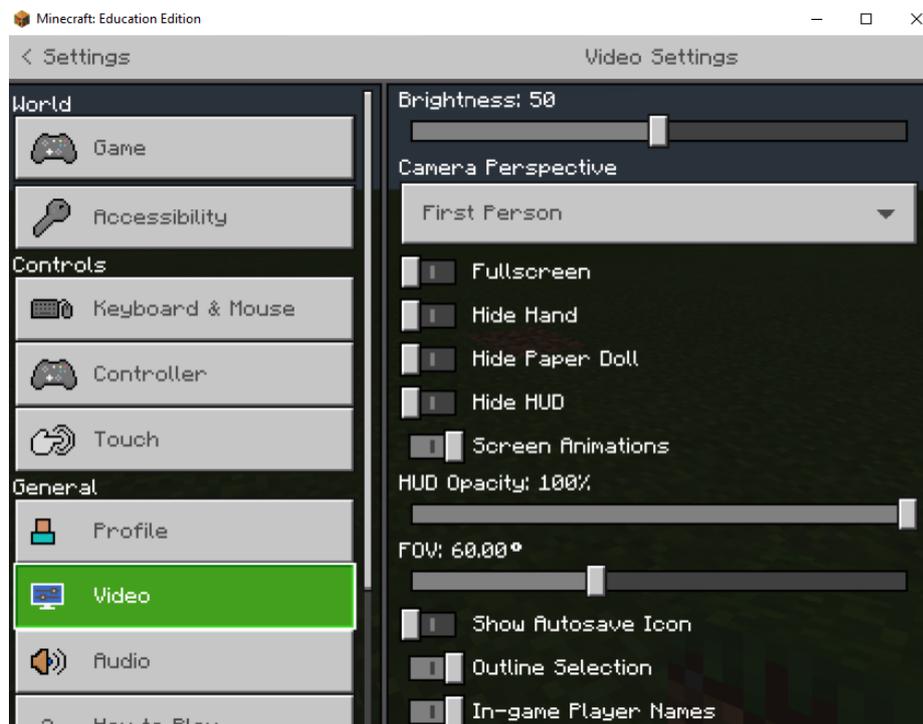
Choosing the setting “Hide Keyboard and mouse hints” hides the hints for your keyboard and mouse. This setting should always be turned off. Having the hints enabled allows the players to have directional keys displayed on the left side of their screen, which helps them move and build in-game. The students who are already familiar with Minecraft might not need these tips, but they will help the less skilled players and make their user experience more pleasant.



## Video settings

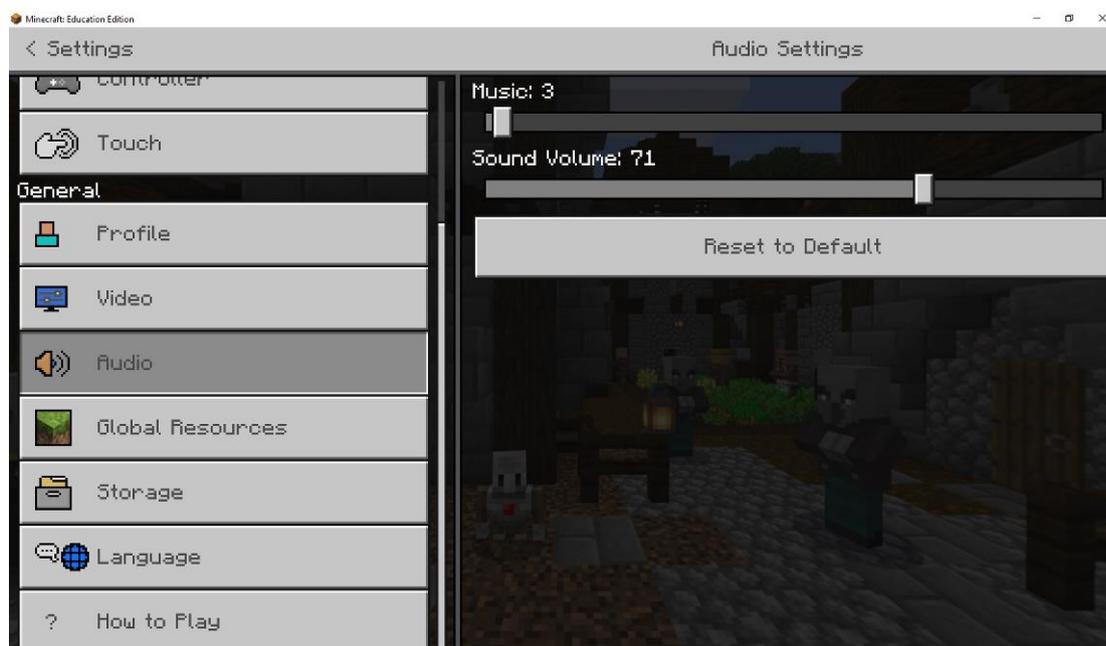
Fullscreen – Enabling this setting will make the game run in fullscreen mode.

View Bobbing – This setting should always be disabled. When turned on, the in-game character bobs up and down a bit when walking. This can cause some players to experience motion sickness.



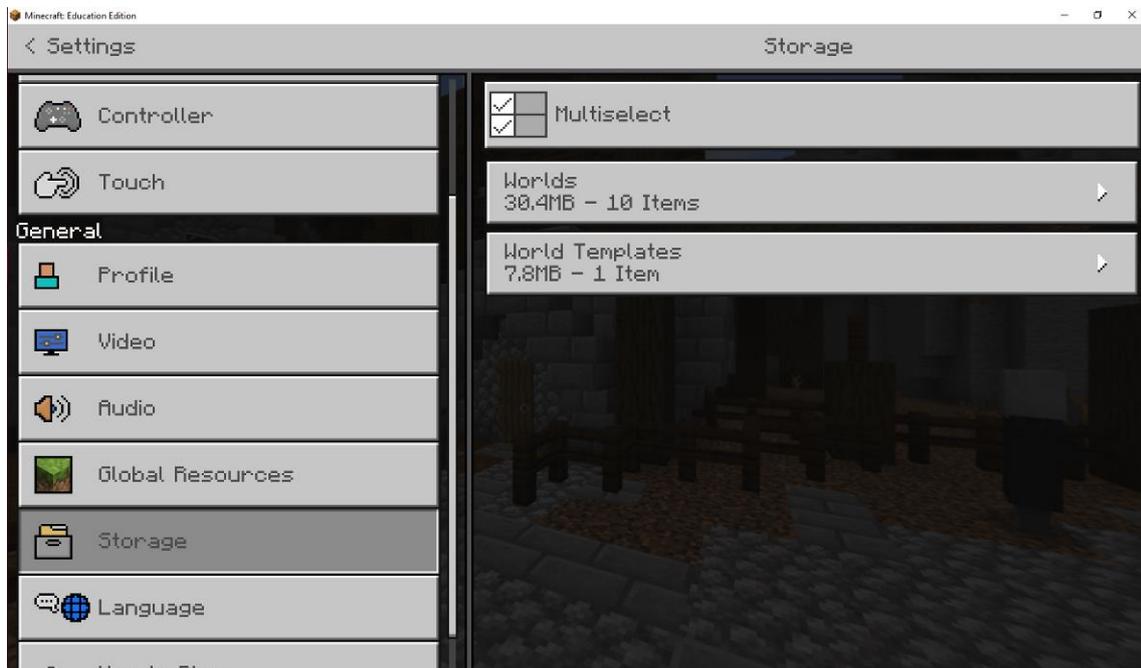
## Audio settings

This is where you can change your sound settings. The slider called “Music” controls the volume of the music that plays in the background of the game. “Sound volume” controls the volume of players and animals. Students should turn off all sounds, since it would be too noisy to have sounds turned on in a classroom full of children.

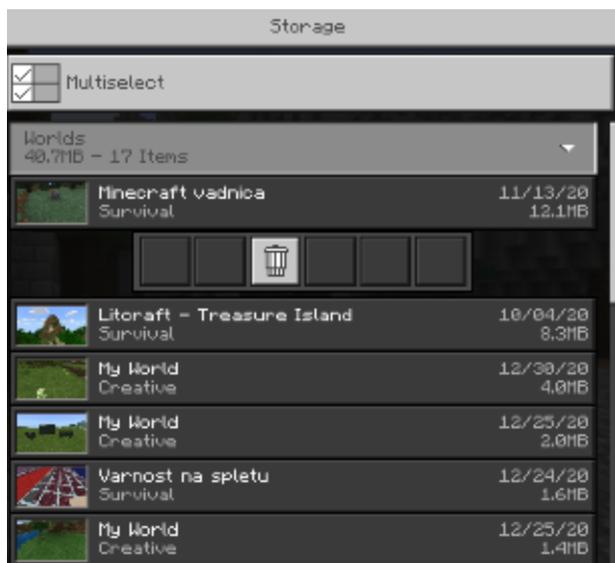


## Storage

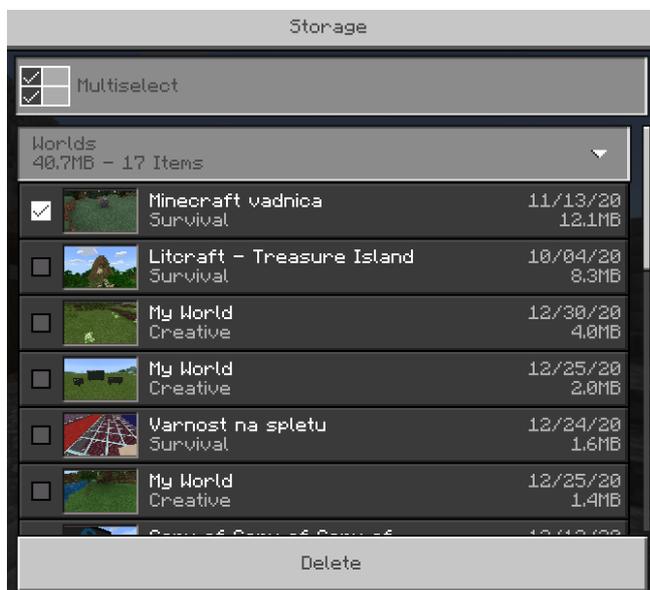
Each time you play in a specific Minecraft world, all the changes get saved. Eventually you can end up with a large number of saved worlds that you might want to delete. You can do this in the “Storage” menu.



Worlds – This is where all the worlds you’ve played are stored. Clicking the world that you do not want to keep makes the delete icon show up. Click on it if you wish to confirm that you want to delete the selected world.

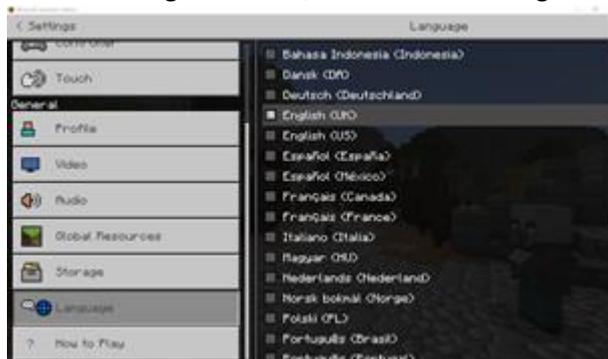


Multiselect – If you want to delete more than one world, you should click this button. Squares will appear on the left side of the list. You can check several squares to select multiple worlds. You delete these worlds by clicking the “Delete” button.



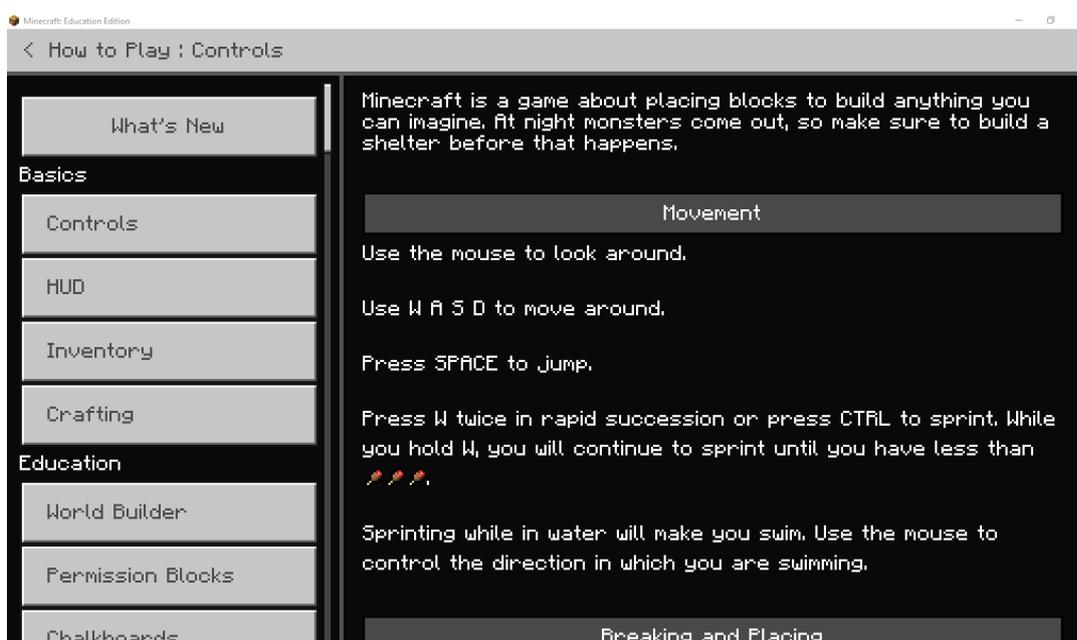
## Language

This menu contains a list of all the languages that Minecraft: Education Edition has been translated to. Only the Java version of the game has been translated to Slovenian and Croatian. The educational version is not available in these languages. Choosing a different language changes the names of the blocks in the game world, but does not change the texts.



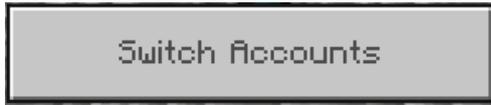
## How to play

This section contains tips concerning different aspects of the game. This includes movement, the basics of survival, basic gameplay tips, and the special features that appear in the educational edition of the game.



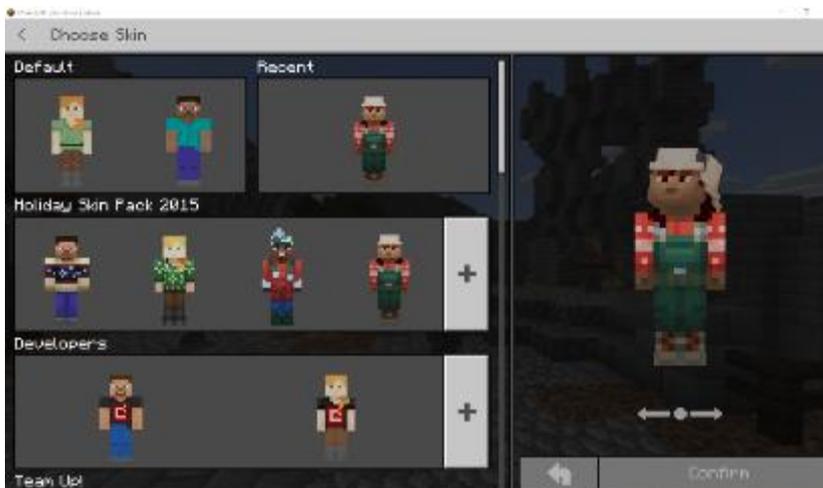
## Switch accounts

Clicking this button lets you switch between different user accounts, if you happen to have more than one.



## The clothing hanger icon

In the bottom right hand corner, under the player icon, there is a clothing hanger icon. Clicking this icon allows you to change your appearance. You are provided with several different settings and options that let you personalize your gaming experience. You can choose the appearance you desire and click the button “Confirm” to confirm your selection and return to the main menu. Clicking the arrow next to the “Confirm” button lets you revert to your old appearance.



## The help icon

In the bottom left corner you will find an icon of a person with a speech bubble. Clicking on this icon opens the official website for Minecraft: Education Edition, where you can ask for help.

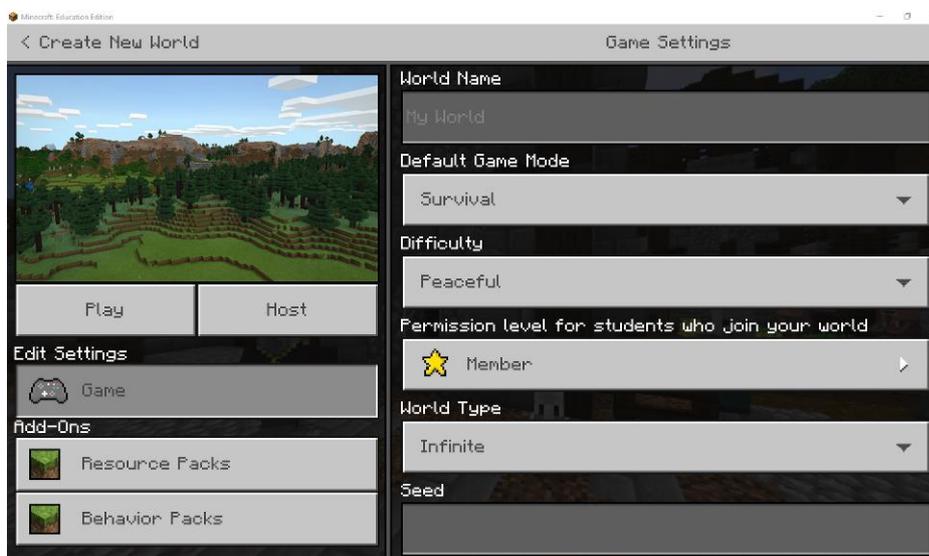
## Game version

In the bottom right corner, you can find the information about the current version of Minecraft that you are using.



## New world settings

In this pop up window you will be able to adjust your settings. This chapter describes the most important and the most commonly used settings.



**World Name** – Enter your world name into this field. Naming your world makes it easier to find it in your library later on. When you export your world you will have a file that is already named.

**Default Game Mode** - This lets you choose the game mode setting. You can choose between survival and creative mode.



**Difficulty** – The game allows you to choose between 4 different difficulty settings. The difficulty named “Peaceful” is the most casual setting, in which mobs do not appear and cannot be summoned by players. Health and hunger continuously regenerate, so it is almost impossible to die. The other three settings, named “Easy”, “Normal” and “Hard”, include mobs that spawn within the world and attack players, who can die in game.

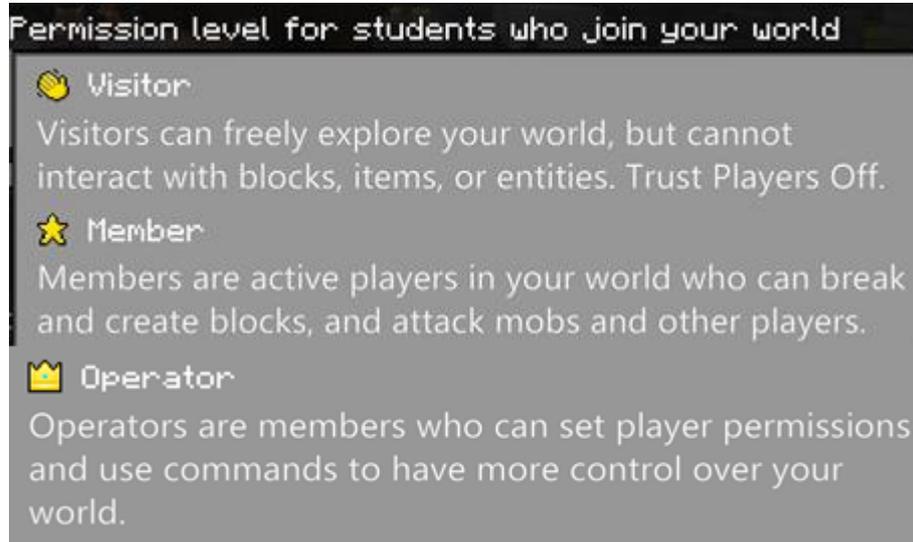


**Permission level for students who join your world** – This is where you can find all types of permission levels for students who want to join your world.

**Visitor** – A visitor can move around the world unimpeded, but cannot use blocks or items. They can’t interact with entities.

**Member** – A member is an active player in your world that can create and break blocks. They can attack animals, mobs or other players.

**Operator** – An operator is a player who can set player permissions. They can use commands and have more control over the world.



**Seed** – This is the identification number of the world that is automatically generated when you export the world. If you know of a specific world, that seems suitable for your lesson, you need to know its seed code to use it.

**Show coordinates** – You can enable this setting when you wish to have your in-game coordinates displayed on the screen. It is considered good practice to have this setting permanently enabled.

**Immediate respawn** – This allows the player to reappear in the game immediately after dying.

**Activate cheats** – This setting allows you to use commands and turn on the World Builder status.

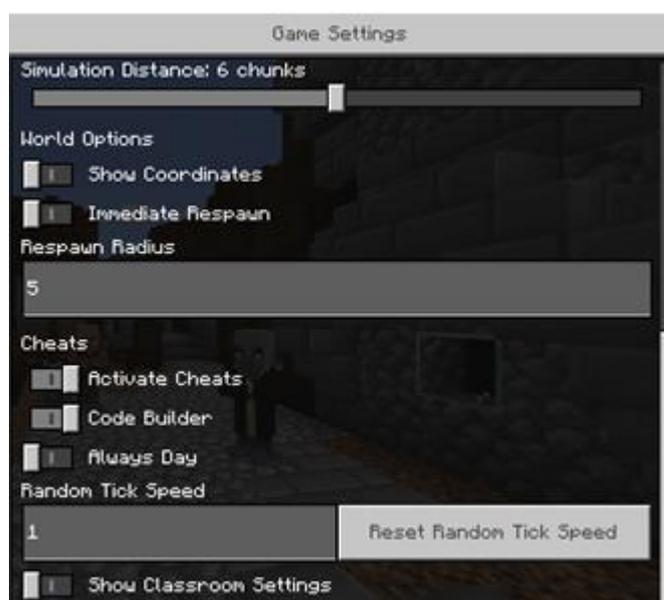
**Random tick speed** – This controls the speed at which the trees and other plants grow.

**Always day** – If this setting isn't enabled, the game will cycle between daytime and night time every 20 minutes. Enabling this setting ensures that it is always daytime in-game. It is recommended that you enable this setting, as it allows you to avoid poor player and mob visibility at night.

**Export world** – Clicking this button allows you to export a world that you've previously created.

**Delete world** – Clicking this button deletes the world.

**Copy world** – This allows you to make a copy of your world. This comes in handy when you want to have several copies of the same world. This also allows you to make changes without risking a pre-built world. You can use this feature when you want to make changes in your world, but are not sure which version of the build you want to keep.



## Game modes

Minecraft: Education Edition currently has three different game modes. Children are often already familiar with the survival and creative mode, as they are available in the original game of Minecraft.

### 1. Survival mode

Players must explore the world, collect building materials and other items that can be used to build, create various tools, and survive. Players can get hurt due to hunger, fall damage, fire damage or drowning. Players can also be damaged by their opponents. If a player takes too much damage they can die.

This mode provides the players with the most authentic gaming experience.

### 2. Creative mode

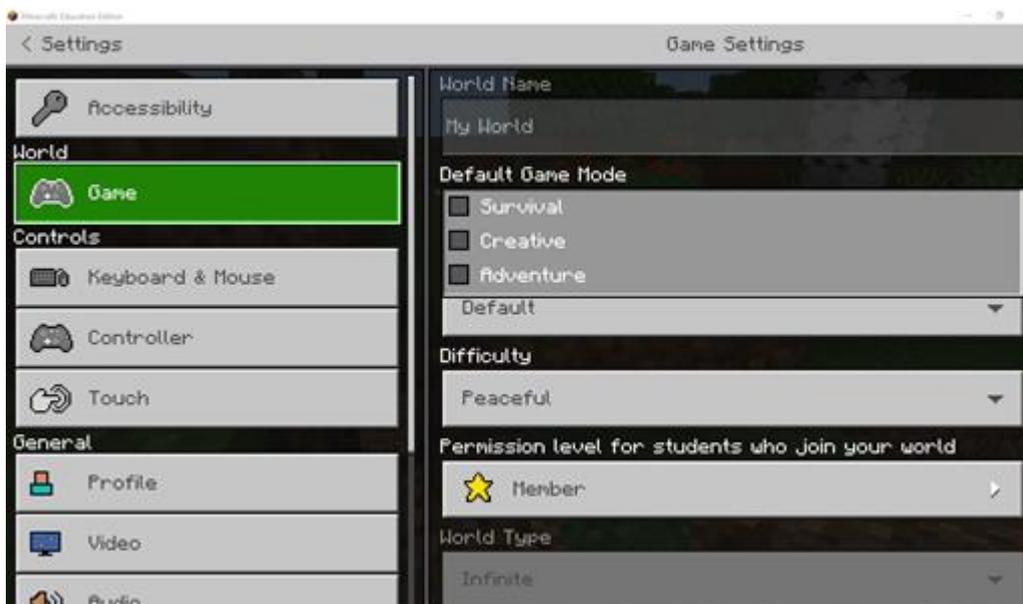
Players do not need to gather resources. At any given moment they have access to an unlimited number of all the available blocks. Players do not take damage from hunger or injuries and cannot die. Players can fly and instantly destroy blocks.

This mode is most suitable for lessons that require a lot of building.

### 3. Adventure mode

Players cannot place or break blocks, and they cannot take damage. Their gaming experience is limited to movement and pressing buttons, switches and other similar objects.

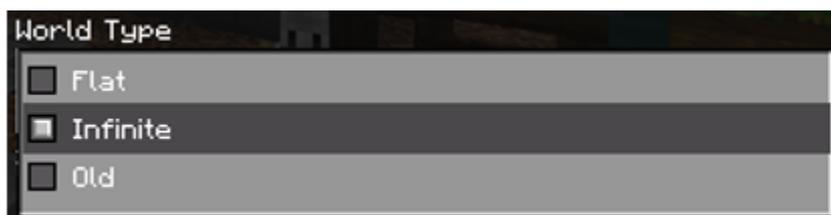
This mode is the most suitable one when dealing with a structured lesson plan that asks the students to explore the world.



## World type

There are 3 different types of worlds.

- Flat – The flat world is only 4 blocks deep. The top layer of blocks is made up of grass. Underneath the grass there are 2 layers of dirt and 1 layer of indestructible bedrock. The world does not contain any special biomes. Animals and mobs spawn as usual.
- Infinite – This is an infinite type of world. It is made up of different types of landscapes and it is deeper compared to the previously mentioned flat world. The world never ends. New sections continuously appear if you explore.
- Old – This is an old world that measures 256 by 256 blocks. When you reach the last block the game does not load a new section of the world. There is an invisible border that you cannot cross.



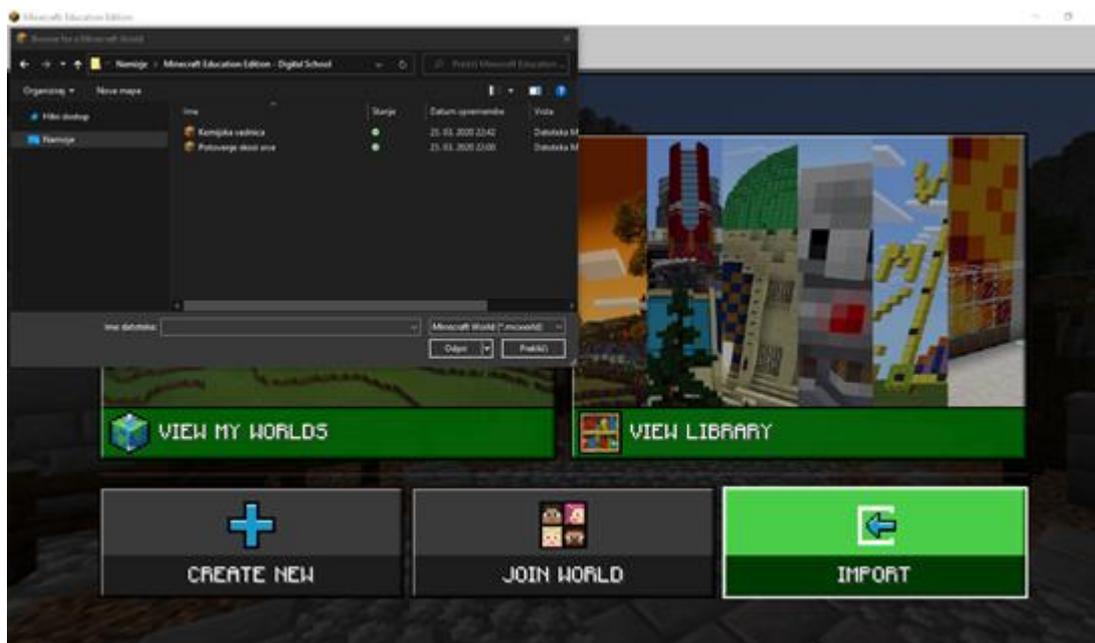
## Import

You can create worlds on your own or you can import them. This allows you to choose between pre-made worlds or lessons that are available on the Minecraft: Education Edition website.

Importing worlds

1. Click "Play" on the home screen of Minecraft.
2. Click the "Import" icon.
3. Search for the world that you want to import in the file browser.

If you open the .mcworld file in your file explorer, the game will automatically start up and create a copy of the world.



## Export

The worlds that you have used in-game can be exported. This allows you to create safety copies of your worlds. It is recommended that you make safety copies before updating your game. The files can be damaged when you install updates.

Exported worlds can be shared with other users. You can use them to measure progress and you can save them so you can use them again. This allows you to restore your worlds if you encounter errors in your class.

If you want to export a world, you need to name it without using any punctuation or special characters in the name.

How to export a world:

- 1) Press “Play” on the home screen of the application.
- 2) Click the “View my worlds” icon.
- 3) Click the world that you want to export, then click the “Settings” button.
- 4) Scroll down through all the options on the right side of the menu. Click “Export world” which is located on the bottom of the list.



- 5) Save the world to your desired location. The exported .mcworld file can be saved wherever you want, including a network drive or a USB drive.

The worlds made in Minecraft Bedrock can easily be converted into .mcworld files. Worlds created in Minecraft: Education Edition, however, cannot be converted into files that can be used in the Bedrock edition.

## Copy world

Clicking the “Copy world” button allows you to create a copy of the world. The copy will be an exact replica of the world as it was at the moment of saving.

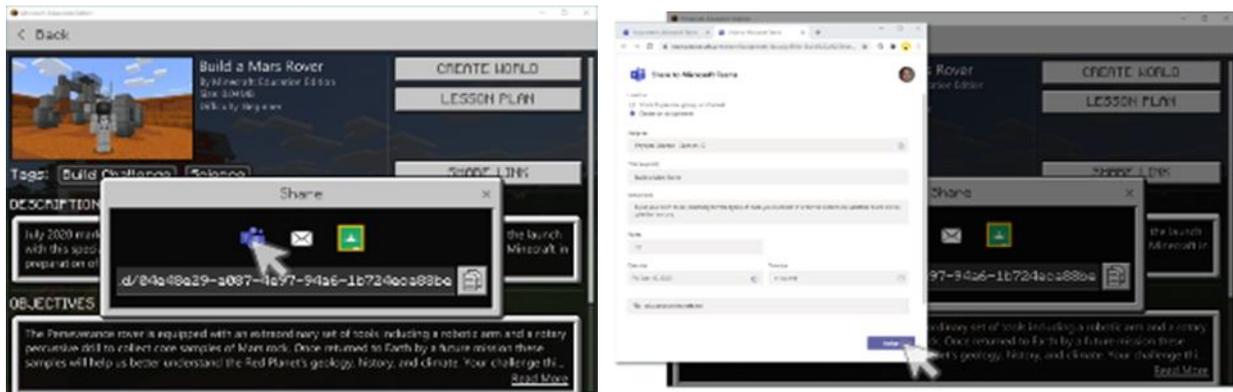


## Sharing worlds

Teachers can now share their worlds and lessons with their students using the Microsoft Teams program. This application is available on devices that use the Windows 10 OS or Chrome OS. iOS users and macOS users can copy and paste a link to the world.

The teacher can share all the lessons located in the game library by clicking the “Share link” button. This opens a new popup window with three icons. The blue icon is linked to Microsoft Teams. The

teacher can share the world as an “Assignment”. They can also share it with an individual or a group in the channel.



Students can access the world by clicking the link in Microsoft Teams. This opens a browser, which starts up the game. If the student does not have the game installed, a pop up window will appear that allows them to download it.

## Multiplayer mode

The multiplayer mode enables several players to interact with the same world simultaneously. Multiplayer mode can be hosted locally (in the same room, such as a classroom), or online. Multiplayer mode enables players to play on their own or cooperate with other players to achieve common goals. Multiplayer mode allows players to communicate and interact with other players.

The multiplayer mode is one of the most popular Minecraft modes that get used in a classroom setting. It encourages communication, cooperation, and the exploration of new and creative ways to solve problems. The educational edition of Minecraft allows you to host a multiplayer game for players who are using the same network, or are within the same tenant. This is the part of the username that follows the @ symbol. All players need to be running the same version of Minecraft: Education Edition. A single multiplayer game can be joined by up to 30 players, including the teacher. The same multiplayer game can be joined by players from any of the supported platforms. Multiplayer mode was designed to be used in the same classroom, where all the players are on the same network. It is possible to run a multiplayer game from home, however.

Additional information about this will be available in a different section the manual. Before you use multiplayer mode it is vital that you set lesson objectives, prepare tasks for your students, and set a time limit to complete them.

### Requirements

- Multiplayer is available to all players who use the same tenant.
- All players need to be using an up to date version of the game.
- All players must be running the same version of the game.

### How to host a game

A multiplayer game can be hosted by any player, however, we would recommend that the teacher hosts the game.

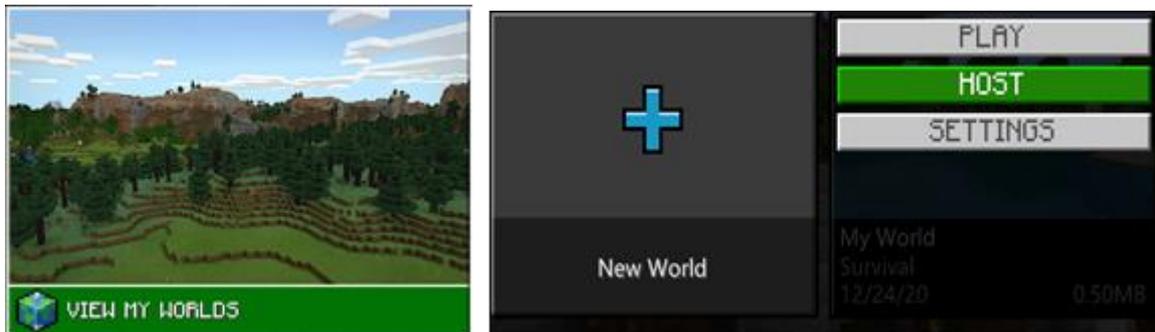
Click the “Play” button on the home screen.



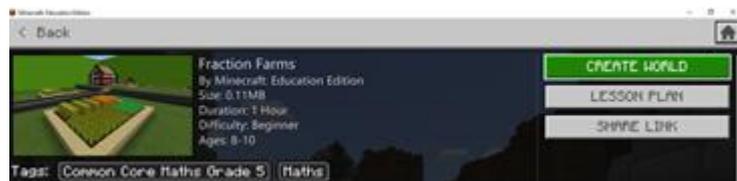
You can create a brand new world. You do this by clicking the “Create New” button that can be found by clicking the “Play” menu, followed by clicking “New”. This opens a new window with all the game settings that you can adjust before hosting the world. When you finish adjusting the settings, click on the “Host” button, which is located below the picture of the world.



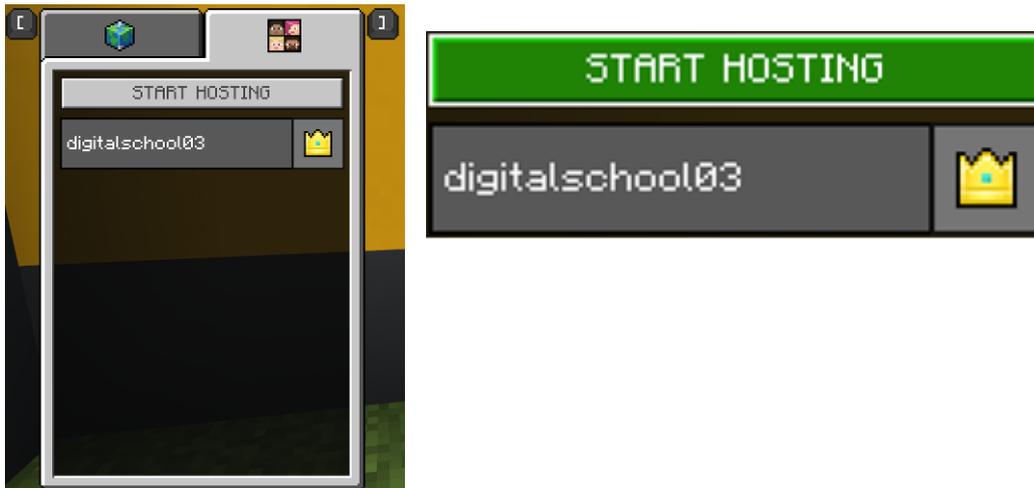
You can also host a world that already exists. You do this by choosing a pre-existing world from the “View My Worlds” menu. Use your left mouse button to click on the world that you want to host a multiplayer game in, and choose the option to “Host”. This creates a new game in your chosen world.



You can import and host worlds from your "View Library" menu. Choose a world from the library and click on it. This will open a new window that contains a description of the world. On the upper right side of the screen you will find the “Create world” button. Clicking on it lets you enter the world.



You can also host a game that you're already in. To host a multiplayer game press the "Escape" key. Several new options will show up. Click the "Friends" tab, which has an icon made up of four faces. Click the "Start hosting" button.



A new dialogue box will show up. You must confirm that you want to create a multiplayer game by clicking the "Confirm" button.



Beneath the "Join Code" text you will see 4 pictures of objects or beings that can be encountered within the game. This is the picture based code that your students will need to enter to join your world. The code must be entered in order from left to right, as shown on your screen.



If a student enters the wrong code several times in a row they will get a warning after three failed attempts. After five failed attempts they will need to wait a few minutes before they can attempt to

join again. This prevents students from guessing the join codes and joining sessions that they haven't been invited to join.

Clicking the "Refresh" button lets you generate a new code. The button is located to the right of the picture based code. 

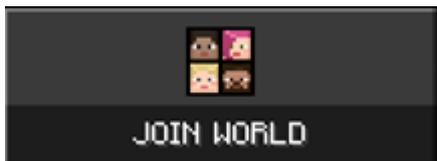
Players who have joined the world before a new code was generated do not need to leave the world while you do this.

### How to join a multiplayer game

Click the "Play" button on your home screen.



In the following menu click the "Join World" button.

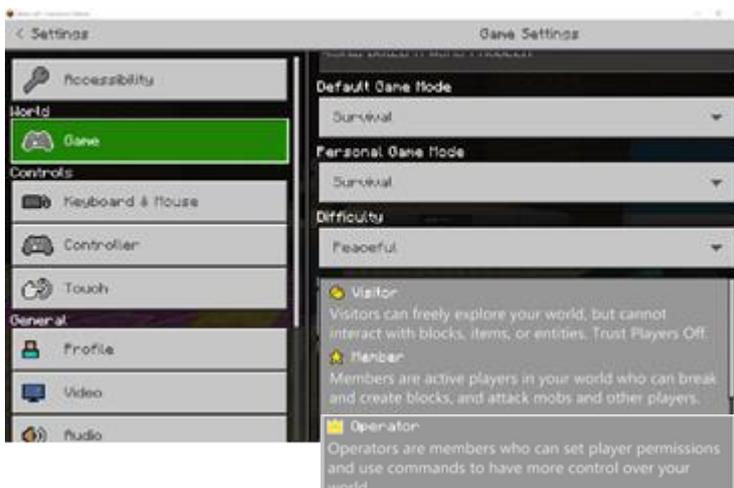


Students must now enter a code made up of four different icons and click the "Confirm" button if they want to join. If the student makes a mistake while entering the code, he or she can delete it by clicking the "Clear" button.



### Multiplayer game settings

The settings menu allows you to change the permission level for players who join the world. The host of the game will always have the role of the operator. Operators are players who have more control over the world. They can set player permissions and remove players from the game.



If you do not want anyone to join an existing game, you can change the join code by pressing the “Esc” key and clicking the “Refresh” button that is located to the right of the code in the “Friends” tab. The operator can set the maximum number of players in the game. To do this you need to press the letter “t” and type in the command /setmaxplayers. After typing the command, you must enter the maximum number of players in the game e.g. /setmaxplayers 10.



### Most frequently encountered problems while hosting multiplayer games

Issues with minimum requirements.

If you can join a multiplayer game but encounter problems when more people join after you, consider the following points.

1. If you want to host a multiplayer game, your internet bandwidth must be at least 1.5Mbps.
2. You can change your graphics settings in the video settings menu (reduce the render distance and turn off the “Fancy Graphics” option).



Connection issues.

1. Close Minecraft and then restart the game. Hosting a multiplayer game should be the first thing you do once the game loads.
2. Host a new world. Do not use a world that has already been used for multiplayer mode.
3. Your network must allow communications with <https://meeservices.azurewebsites.net>. This URL should be whitelisted on all devices and systems that can block your access to the internet. Check your router, your antivirus, and your firewall settings. This step usually isn't required.

You can find the instructions on how to use whitelisting in this article:

<https://jackboxgames.happyfox.com/kb/article/28-how-to-whitelist-and-resolve-issues-in-antivirus-software-and-firewalls/>

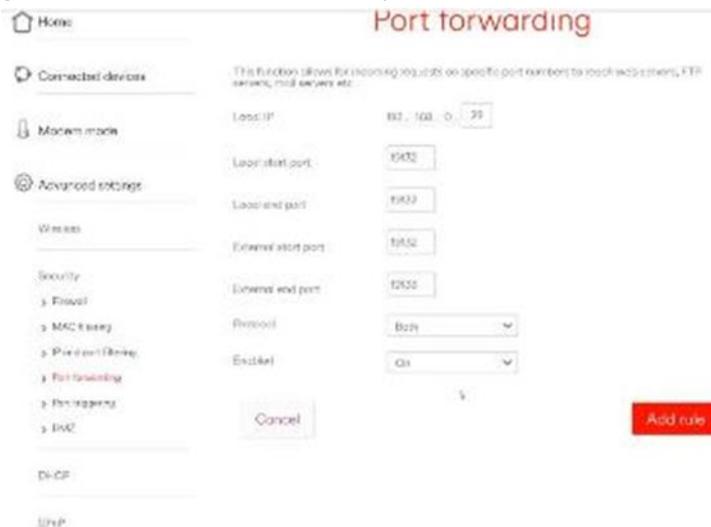
4. It is vital that all the players use the same version of Minecraft. It is recommended that you use the most up to date version. If your players do not have the same version of the game installed, they will get a “Could not connect. Outdated server” error message. The newest version is available on this website: [education.minecraft.net](http://education.minecraft.net)

5. If the host loses his or her connection, all the players will get disconnected as well. The host will need to host the session again and all the players will need to re-join the world.
6. Connection quality can often be a problem with Wi-fi. It is advisable to connect using a network cable.
7. Make sure that port 19132 is not blocked in your network configuration. It is recommended to set up port forwarding on your router as well. This is something that only the host of the game needs to do. This setting allows players to connect and makes the connection faster and more stable. To set up port forwarding, you need to know the IP address of your router and the IP of your device.

You can find your router's IP using various websites such as myip.com

Visiting this website will give you information about your router's IP number. The IP address will be made up of 11 numbers, separated by dots (e.g. 123.456.789.01. )

The next step involves signing in to your router. You do this by entering the IP address that you acquired in the previous step, into your browser. This will open a new window where you must enter your username and password. You can typically find the username and password on the sticker that is on your router or the papers that came with the router. On the website you will find a tab called "Port forwarding", which contains the TCP and the UP. In the "Local start point" you need to enter 19132, in the "Local end port" tab you enter 19133, in the "External start port" tab you enter 19132, and in the "External end port" you enter 19133. Below this text you will find a picture that will help you set up port forwarding. The website that lets you access your router may look different than the example given, however, the functionality should be the same or at least very similar.



8. Students should try to join the game by typing in the IP address. The drawback of using this method is that you will have to generate new join codes for each multiplayer game. Using this method requires you to go through the port forwarding process described in the previous section. Players can join your game by clicking the "More options" icon that looks like a triple dot button. 

This opens a new window where they can enter the IP address of your router and the port number (Port 19132). Students then click the "Join" button to join the game.



9. If you need additional help, this website is available to all users: [https://aka.ms/MEE New Request](https://aka.ms/MEE_New_Request)

There is another way for you to interact with your students using the same world. However, this does not include using the multiplayer mode. The teacher can give the student a task that involves building a specific thing within a selected world. The student exports the world and sends it to the teacher. The teacher can then send that same world to the next student and repeat the process until everyone's had their turn.

## Immersive reader

The immersive reader is an integrated tool that helps students read or translate text in-game. This includes character dialogue, boards and settings. The immersive reader includes a picture dictionary that contains the images of characters specific to Minecraft (e.g. Creepers or Mooshrooms). The immersive reader can read text out loud, however, that feature is currently not available in Slovenian or Croatian. It includes features such as changing the font size, changing the font, and word type recognition (noun, verb, adjective). Foreign language teachers can use these features in their lessons.

## Chat and Commands

Minecraft has a chatroom that can be used to message other players or type in commands. You can access the chatroom by pressing the letter T, which opens a new window that lets you enter your messages. You can send messages by typing them in the bottom section of the window and either clicking the "Send" button or pressing enter.

Commands start with the slash (/) symbol. Each time you enter a command it shows up in the upper left corner of your screen. You will notice that entering the slash symbol shows you some suggestions for various commands. Commands let you change things within the world, such as time, weather, and game mode. You can change the spawn location of your players, teleport your players, or give players the World Builder status.

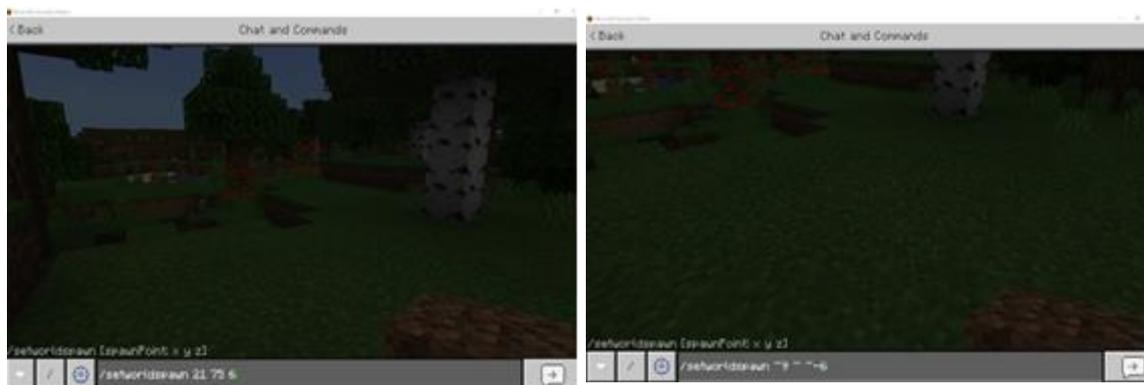


### The /setworldspawn command

This is the command that lets you set the spawn point for all your players. This location is where they will appear when they first join the world. When you create your world the game decides where to spawn you. While playing and building, your location changes. If you want your students to appear in a different part of the world, you can change this by using the /setworldspawn command in the Chat and Commands window. Entering the command will make the players appear at your location. If you want your players to appear at specific coordinates you can enter them like this:

/setworldspawn 21 75 6 – this command uses specific X, Y, and Z coordinates.

/setworldspawn ~9 ~~-6 – this is what the command should look like when you want to appear 9 blocks to the east and 6 blocks to the north of your current location.



### The World Builder status

The world builder status allows the player to place all types of blocks. This option can be set to either “true” or “false”.

This status can be changed in the chatroom (T) by typing in the command /wb or /worldbuilder and pressing enter. If you want all players to have the world builder status, you need to use the command /ability @a worldbuilder true/false.

@a = all players

In the upper left corner of your screen you will see a notification about the world builder status changing to either “true” or “false.”



When a player has the world builder status turned on he or she can change the world regardless of the game mode. They can place and destroy blocks, even if deny blocks were used.

### Player teleportation

One of the most useful commands in the game is the command that teleports or moves players from one point to another. In practice, this is typically useful when a student gets lost or stuck, so you want to teleport them back to your location. You can find tips on how to use this command in the chat room, if you click the button with the slash icon.

You can use this command by typing /teleport or /tp. You need to add the name of the player that you want to move and the name of the player that is located at the desired location. When you include player names in your command you do not use any special symbols. If you want to teleport multiple players at once, you can use @a, which stands for all players.



## Examples of commands

Moving all players to the player named digitalschool01 : /tp @a digitalschool01



Moving the player named digitalschool02 to the player named digitalschool01: /tp digitalschool02 digitalschool01



## The main elements of the game

### Heads-up-display

The heads-up display (HUD) is a transparent display that shows information within the player's normal field of view. This means that the player does not need to look for that information elsewhere. In video games the HUD is a type of user interface that simultaneously provides the player with information about the character's health, the number of items, etc.

In adventure and survival mode of Minecraft: Education Edition, the HUD contains information about the player's health (10 heart icons), hunger (10 drumsticks), the experience bar (a green bar split into 18 equal-sized sections) and the hotbar (a selection bar with nine slots). The hotbar is located at the bottom of the screen. The slot that is currently selected is surrounded by a frame. You can choose a different slot by using your mouse wheel or pressing the corresponding number (1-9).

When the player equips gear, the armor strength will also be displayed (icon of a chestplate). If the player is underwater, you can see their remaining oxygen (bubble icons). If either of these fields is empty, the player begins to lose health and can potentially die.



## Movement

In Minecraft, you move by using the direction keys W, S, A, and D.



The direction that you move depends on the direction that you are facing.

W – forward,

S – backwards,

A – to the left,

D – to the right.

Moving the mouse cursor controls the direction of your camera in-game. If you want to turn without moving, you move the mouse. Of course, you can combine both types of movement. You do this by using the mouse to turn towards the direction that you want to move and pressing the W key.

When you want to move to a block that is 1 level higher than the block that you are currently standing on, you must jump on top of it. If you want to jump the height of one block while standing in place, you only need to press the space bar. If you press the space bar and one of the direction keys, you will jump the height of one block and move in the direction that you are pressing.

In addition to regular movement, you can also run or sneak. You do this by pressing a direction key and one other key:

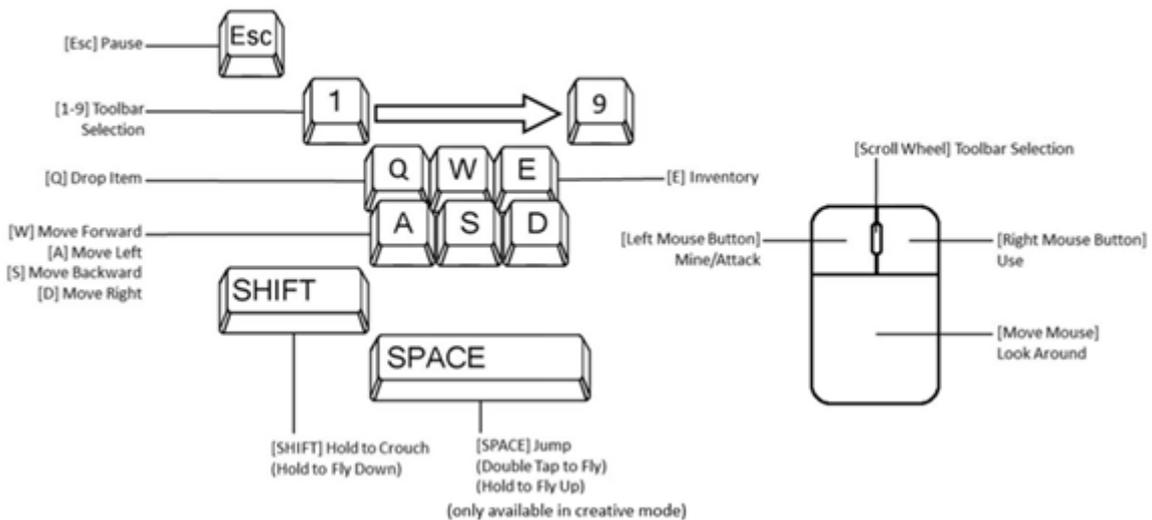
SHIFT – makes you move slowly and carefully,

CONTROL – makes you move faster.

In creative mode, you can also fly. You can switch between regular movement and flight by pressing the space bar twice. Once you are in the air you gain height by pressing the space bar or the CONTROL (Ctrl) key. You descend to the ground by pressing the SHIFT key.

# Minecraft Controls

## Mouse & Keyboard



## Blocks

Blocks are materials that can be used to build things in-game. Blocks can be created, found or acquired. Block make up the in-game environment and can be harvested, placed, and utilized in various ways. Some blocks appear in the world automatically, such as dirt or stone blocks. Players must craft other types of blocks by using a crafting table.



## Inventory

The player inventory is made up of 36 slots that allow you to store specific items or blocks. To open your inventory, press the E key.

This opens a new pop-up menu which displays your player character and the gear that you are currently using. There is also a 2x2 crafting grid. In the middle of the inventory you will see 3 rows, each of them has 9 slots. This is the general inventory. Underneath the general inventory there is another row that contains 9 slots. This is your hotbar. If you want to use a tool or a specific block you need to drag it to the hotbar. You can only equip the items that are located in your hotbar. You can only use the items that your player character currently has equipped in their hands.



At the bottom of the screen, you can see your hotbar. The slot that is currently selected is surrounded by a frame. You can choose a different slot by using your mouse wheel or pressing the corresponding number (1-9).

The number of blocks that can be stacked in a single inventory slot depends on their type. Most blocks can stack up to a maximum of 64 in one slot. Certain items can only stack to 16, and there are items that take up the entire slot.

As long as your inventory has enough space left to stack specific items, your character will pick up items automatically when you get near them. Once you run out of space in your inventory, you can no longer pick up items, you need to empty some of your inventory first. You do this by using your mouse and dragging the unwanted items out of your inventory. You can also drop items by pressing the Q key.

In creative mode, your inventory is infinite. One of the inventory tabs lets you select any block or item that is available in-game. You can use infinite amounts of them.

### The building block tab

Pressing the E key opens a new pop-up window with a list of all the blocks that are available in Minecraft. In creative mode, you can press the E key to access all the blocks and items that exist in-game. These can be used in infinite amounts. In addition to that, creative mode allows you to instantly destroy blocks, without using any tools. Blocks disappear when destroyed. If you are playing Minecraft in adventure or survival mode, breaking a block takes a few seconds. The length of time varies between different types of blocks. When you break the block the block falls to the ground and can be picked up. If you break the block in creative mode it disappears. You can break any type of block, with the exception of bedrock.

### Placing and breaking blocks

Placing and breaking blocks is one of the main game mechanics in Minecraft.



The blocks that you have in your inventory can be placed next to, on top of, or under another block by pressing and holding the right mouse button. Most blocks are not affected by gravity, they can levitate mid-air, even when no other blocks are placed beneath them. Some types of blocks, such as sand and gravel, will fall down and land on the nearest block that is beneath them.

You break blocks by pressing the left mouse button. Some types of blocks can be broken with any type of weapon, including bare hands. Other types of blocks require appropriate tools. When playing the game in survival mode, you need to craft the tools first.

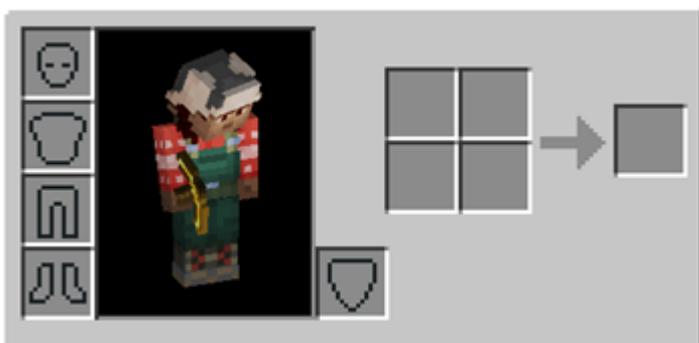
## Crafting

Crafting is how players make new blocks and items in Minecraft. To craft something, the player will need to move items from their inventory to the crafting grid and arrange them according to the recipe. You can access your 2x2 crafting grid by opening your player inventory, and a 3x3 grid can be accessed by using a crafting table.



Players can always access the crafting grid that is located in their inventory. This is where they can prepare recipes that only require elements that fit into a 2x2 grid. This allows you to craft items such as wooden planks, sticks, crafting tables, torches, and certain shapeless recipes.

If you wish to craft items using a 3x3 grid, you need to make a crafting table and place it in your world. You can access the crafting table by right-clicking on it. This leads you to the 3x3 crafting grid that the player can use to make any of the in-game recipes.



Some recipes do not require the ingredients to be placed in a specific way. These are known as shapeless recipes. Players can, for example, craft a fermented spider eye by placing the ingredients on the grid in any given way.

Crafting most items requires the player to place the ingredients on the crafting grid in a specific order. These recipes are generally known as shaped recipes. The ingredients can be moved up, down, left or right. They can also be turned sideways. For example, a 3x1 recipe, such as bread, can be made using either the top, middle, or bottom row of a 3x3 grid. You cannot, however, make it on a 2x2 grid, as it needs to be 3 slots wide. Bows, in the meantime, can be made with string that is placed either on the right or the left side of the sticks.



In creative mode, players have unlimited amounts of blocks and items. In survival and adventure modes, players cannot access all the items. They can only access the recipes, which serve as a crafting guide. The item library shows the player all the crafting recipes that they've had the materials for.



## Assessment tools

Students can create things within the virtual world and share both their progress and their understanding of key concepts by using various in-game tools. As a teacher, you will need to choose the aspects of learning that you wish to assess. It is best if you prepare your lesson plans first and then decide on your assessment methods. Assessment can be done through debate, writing, reflection, doing experiments, or through the use of some of the in-game tools. There are various ways in which you can communicate with your students or give them instructions. You can use signs, books, NPCs, and boards.

## Chalkboards

There are three different types of chalkboards that come in three different sizes: slates, posters, and boards. The smallest board available is the slate, which measures 1x1 blocks. A poster measures 2x1, and a board measures 2x3. Each type of chalkboard can be filled with text, but the amount of text depends on the size of the board. You can find boards in your item library, which you can open by pressing the E key.



### Using chalkboards

You can find the desired chalkboard in your item library. You can do this by entering the name of the item into the search bar, but you can also find it in the “Items” tab. If you want to use all three types of chalkboard you have to move them to your inventory. You do this by left-clicking the chalkboard that you want to use and moving it to your inventory. It is best if you move it to your hotbar.



When you have the chalkboard in your character’s hand, you can place it by right-clicking the desired location.



Chalkboards can be placed on the ground or on the side of a wall. If you want to add text to your chalkboard, you need to right-click it. This will open a new popup window that allows you to enter your text. The amount of text you can add depends on the size of the board. You will notice that when you use č, š, ž the font changes a bit, but only in the line that contains the aforementioned letters. In the following line your font will look the same as before. This isn't necessarily visually appealing and may bother some people, but it cannot be changed.

It is advisable to save the entire text that you want to write on the chalkboard in a text file on your computer. It is possible to accidentally click on the chalkboard and delete its contents.

The text that you put on the chalkboard can be edited later on. Players can edit or destroy chalkboards even if they do not have the world builder status turned on. Once you've entered your text, you can lock the chalkboard by clicking the "Lock" button. Once you're done editing the chalkboard, you can save its contents by clicking the X in the upper right corner.

You can change the colour of your text. You do this by typing the § symbol and a number or a letter in front of the text. You can use various colours on the same board or sign. You can also change the font style.

### **Colour codes**

§0 – black

§1 – dark blue

§2 – dark green

§3 – dark aqua

§4 – dark red

§5 – dark purple

§6 – gold

§7 – grey

§8 – dark grey

§9 – blue

§a – green

§b – aqua

§c – red

§d – light purple

§e – yellow

§f – white



### Formatting codes

§k – obfuscated text

§l – bold text

§o – italic text

§r – reset



### Signs

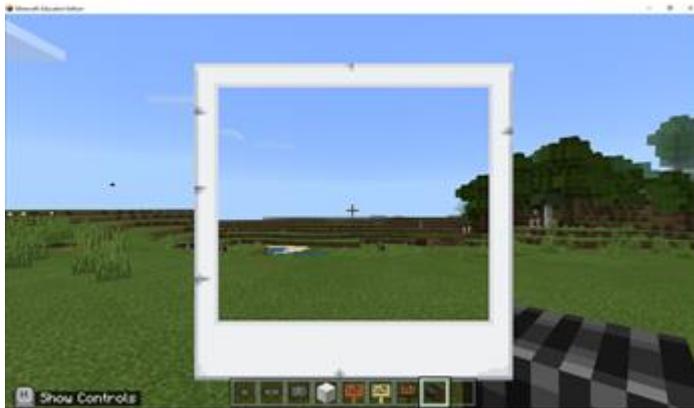
Signs can be found in your inventory by typing “sign” into the search tab. A sign can also be used to display text, but it is smaller than a chalkboard. It allows you to enter up to four lines of text. Unlike chalkboards, signs save the text permanently. Chalkboards can only be green, but signs come in various colours. Signs can be placed on the ground or on top of another block.



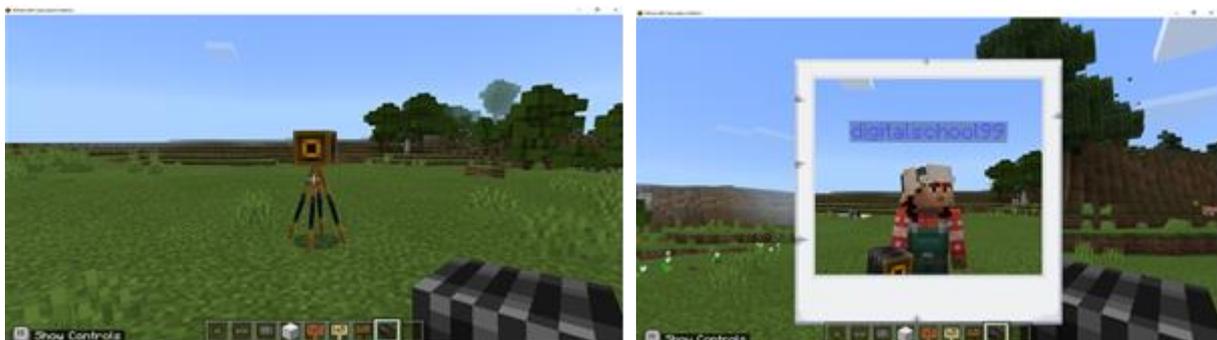
The default colour of the text is black, but you can change it by typing the \$ symbol and a number or a letter in front of the text. You can use several different colours on the same sign.

## The camera

You can use the camera to take photos in-game which you can then export. When you hold your camera in your hand you can use your right mouse button to capture your screen in first-person view. This picture gets saved to your portfolio.



You can also place your camera inside your world. You do this by right-clicking an existing block. Once the camera has been placed, you can activate it by using your right mouse button. While the camera blinks, the timer counts down to zero. When five seconds have passed, the camera takes a photo in the form of a self-portrait. If you move around during the countdown, the camera will keep track of you. The camera will disappear after taking one photo. If you want to take another photo you will need to place a new camera. The camera can be used by any given player within that world. If you want your students to use them during your lessons, you will need to place multiple cameras. You can access the photos in your portfolio.

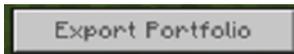


## The portfolio

All the photos that you take in-game get saved to this portfolio. You can find it in your inventory under “portfolio”. Once you have it equipped, you can use your right mouse button to open it. It will bring up a two-page book that contains your photos in their chronological order.



You can add captions below each picture. Photos can be exported by pressing the button named “Export portfolio”. This will create a .pdf file with all the photos in a specified folder.



## Book and quill

The item named “Book and Quill” can be found in your inventory. This item is used to document things by copying and pasting text or importing photos from the game world. Students can use this item by clicking the quill icon which is located at the bottom of the book page. This will bring up new options that let you add or delete a page, add screenshots that you took using the camera, or move contents from one page to another. The book can be used as a tool that lets your students write a story, but they can also use it to answer the questions that they receive from NPCs or find on chalkboards. One of the advantages of using the Book and Quill item is that it lets your students export their book. Once they are done they can sign it and close it. Once the book has been closed, they can no longer write in it. It becomes an enchanted purple book that can be exported as a .pdf file. 

The file name will match the title of the book: "Book title Author's name".



## Banners

One of the items that you can use to add text in-game is the banner. Banners can be placed on the ground or on walls. You can use them to make signs or flags.

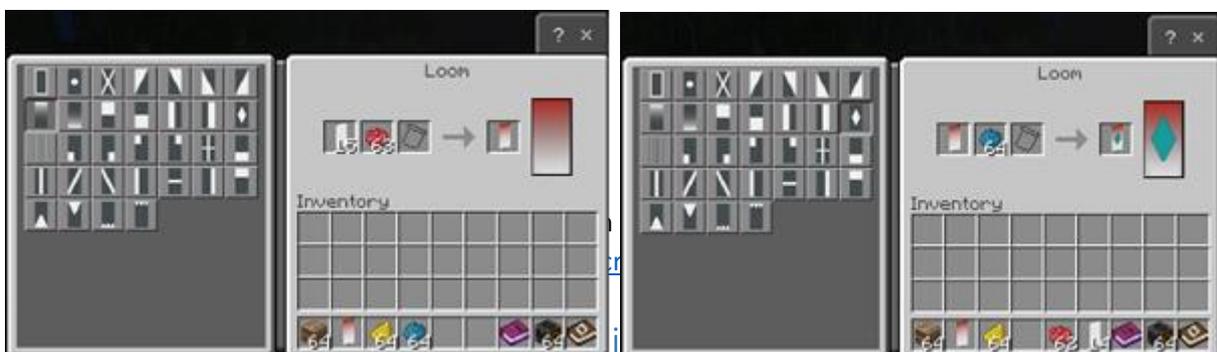
To make a banner you will need a loom,  a banner of any colour,  and a dye.   

The banners and dyes in your inventory come in different colours. Once you have placed the loom on the ground and you have a banner and some dye in your inventory, you can right-click on the loom. This opens a pop-up window that lets you use the loom.

On the left side, you will see different patterns that can be applied to banners.

On the right side you will see three slots. You place the banner into the left-hand slot that's marked with a banner symbol. The middle slot is where you put the dye. The right-hand slot should be left empty. On the right side of the arrow you will see a banner appear. The banner is stored in your inventory. At this point you can either use your banner or add a pattern to it.

If you want to make a banner with a customized pattern, you will need to take the banner out of your inventory and put it in the left slot again. You can then choose the next pattern and add a dye. You can use more than one dye on the same banner.



Sample lesson: arrays (math)

<https://education.minecraft.net/en-us/lessons/arrays-2>

Students can use blocks to create arrays that help them solve single digit and double digit multiplication problems. NPCs provide students with a camera and a portfolio, and explain the objectives. Each time a student solves a problem, they should take a picture of their solution, and write the equation in their portfolio. Once a student has solved all ten tasks, they can export their portfolio and send it to their teacher for review.

Sample lesson: Javelin line plots (math)

<https://education.minecraft.net/lessons/javelin-line-plots/>

In this lesson, students answer questions set by NPCs. The wall that was blocking a javelin throw field will then disappear. Students will find a chest with ten tridents and a book and quill item to track their data. Students will throw all ten tridents and write down their measurements using fractions.

Sample lesson: Replicating landmarks (social studies)

<https://education.minecraft.net/lessons/replicating-landmarks/>

In this unit, students research and recreate structures from history, such as buildings, monuments, castles or bridges. Students can use signs to name their landmarks and exchange feedback.

Sample lesson: Meet and greet (social studies)

<https://education.minecraft.net/lessons/meet-and-greet/>

In this lesson, students will choose a significant person in the past and add them to a timeline. They can make an NPC that represents their historical figure. This NPC can share their story.

Sample lesson: Quiet on Set! (art and design)

<https://education.minecraft.net/lessons/quiet-on-set/>

The students prepare a stage design. They can add their own colour schemes and all the features of the set. This includes the stage, the seating area, the lighting, cameras, backdrops, and props. They can then use the structure block to export their 3D model.

## Lighting

When you build a world, it is important to consider the type of lighting that you want to use. You can use light-emitting items, such as torches, redstone torches, campfires, sea lanterns, glowstones, lanterns, redstone lamps, Jack-O-Lanterns or magma blocks. You can integrate these blocks into your build or cover them with carpets. This still lights up the area, but makes the building look nicer.



### The Light Block

The light producing block called the light block is a special item that lights up your build, but it is not located in the player's inventory. You can only obtain it by using commands. It can be placed the same way you would place any other block, however, the block itself is not visible. You can destroy the block by building another block in the same space that it occupies.

Command: `/give @p light_block X Z (/give @p light_block 64 15)`

X = number of objects

Y = light level 0-15 (0 being the dimmest level and 15 being the brightest)

## Special blocks

Minecraft: Education Edition uses some special blocks that are not available in other editions of the game. They are meant for teachers and world builders. These blocks make it easier to control what happens in your game world. These blocks can make it easier to save your structures, restrict your players' movement to specific parts of the world where they can complete tasks, and set up designated building areas. These are the special blocks: Allow block, Deny block, Border block, and the Structure block.

When playing in creative mode, you can find these blocks in your block tab. You can only use them when you have the world builder status enabled. Special blocks only affect the ones built above them and not the ones beneath them. They can be placed underneath other blocks.



### Allow block

This block lets players place or destroy blocks in the area above it. Players can interact with any object placed on top of this block. This includes doors, buttons, switches, beds or chests. If you have blocked your players from building in other parts of the world, you can use the allow block to let your students build in a specified area.

### Deny block

This block does the opposite of the allow block. It prohibits players from placing or destroying blocks in the area above it. It still allows players to interact with any object that is placed on top of it. The player can press buttons, pull switches, open chests or sleep in a bed. When you play the game in creative mode with world builder status turned on, you can find these blocks in your block tab. If two allow or deny blocks are placed on top of one another, the block that is placed higher takes precedence. Both blocks are resistant to explosives, but can be destroyed by the ender dragon.

## Border block

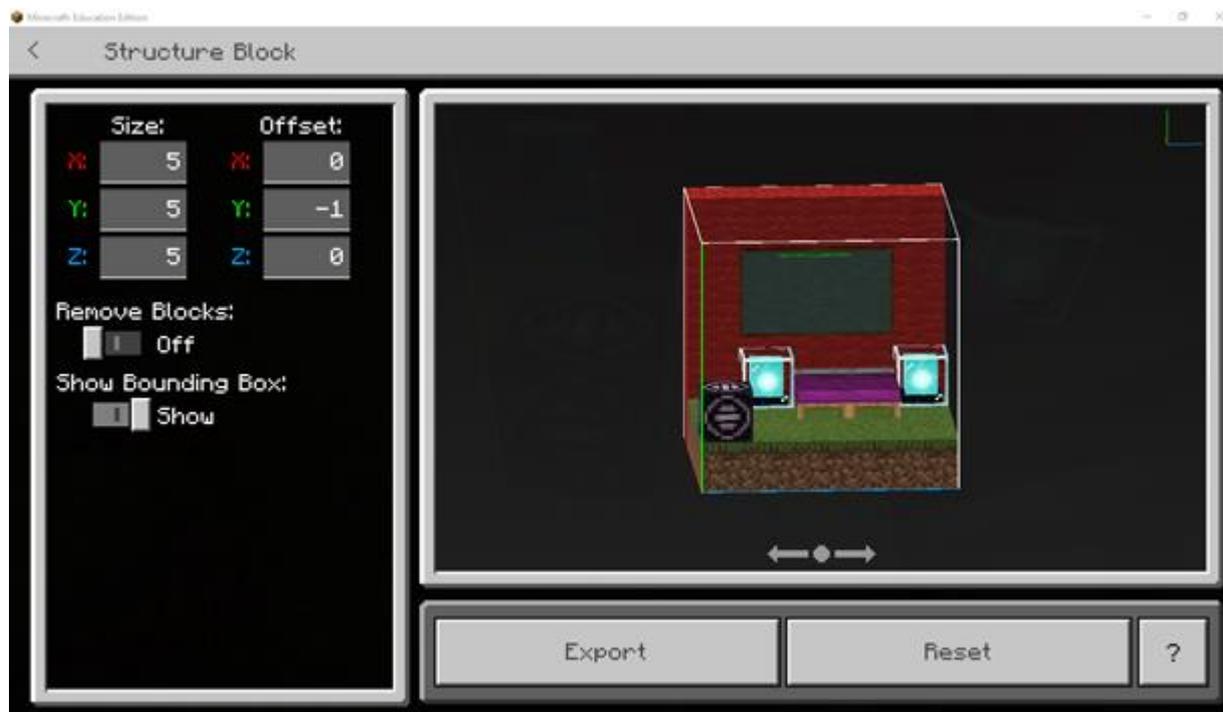
The border block looks like a red fence. It prevents players from wandering off too far away from the designated area. It prohibits players from jumping, climbing, walking, flying, building, or tunnelling past them. Players who don't have the world builder status enabled cannot destroy these blocks. Only the players who have world builder status enabled are allowed to place, destroy, or cross them. You cannot jump over them even from a height. They limit the player's movement even if they are hidden underneath other blocks. Border blocks cannot be destroyed or damaged by tools or explosives

## Structure block

Minecraft: Education Edition includes so called structure blocks that let users capture and export their build in the form of a 3D file. This is useful for documenting your work or showing the inside of your structure. This is also useful for formative assessment. To use these blocks, you must enable the world builder status. The structure block can be found in your block inventory. You can place the block by pressing your right mouse button, you can destroy it by pressing the left mouse button. When you want to use the block you right-click again, which opens the options menu. On the right side you will see the information about the section of your game world that the block is about to capture. The borders of this section are marked by lines which can be moved. The coloured lines that signify X, Y, and Z coordinates can be used as a guideline. You can change these lines on the left side of the pop up window. You can remove these lines entirely by switching off the "Show bounding box" setting.

You can adjust the size of the area by changing the X, Y, and Z coordinates. You can do this by entering new numbers.

The "Offset" function marks the spot inside the build where the block is located. Changing the coordinates can also change its location. You can save your file by pressing the "Export" button. The file is saved in the .glb format, which can be opened in paint 3D, that is available on Windows operating systems.

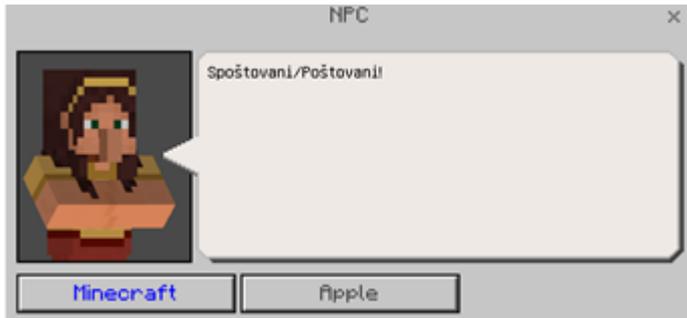


## NPC (non-player character)

NPCs or non-player characters are characters that are not controlled by players. They are humanoid characters that make the world feel more alive. They can be used to communicate with players and provide them with information. Players communicate with NPCs and receive information, explanations, links to external websites, videos, or online classrooms. Your Minecraft world can contain more than one NPC. You can create NPCs by using the “Spawn NPC” item that can be found in your block library. It looks like  an egg with colourful dots. You can place an NPC using your right mouse button and remove it with your left mouse button. NPCs are exclusive to Minecraft: Education Edition. If you want to use them, you need to have the World Builder status enabled. NPCs stay where you put them. Clicking on the NPC with your right mouse button brings up a screen that lets you customize your NPC. You can do this repeatedly. You can remove or rename an NPC, or edit the dialogue that the NPC displays when players interact with it.



Since the last game update, you can no longer see your NPC's name through other blocks, walls or other obstacles. You can also name your NPC using nothing but a space. You can copy and paste your NPC's dialogue from a word document. This way you do not lose your text if it gets accidentally deleted in-game. You can add buttons that contain URL links or commands. The button that contains a link will have blue text, the text on the button that contains a command will be black.



When using commands, you have three options:

- Button mode: the command gets executed when the player presses the button within the NPC dialogue window.
- On enter: the command gets executed when the player opens the NPC dialogue window. This happens unbeknownst to the player.
- On exit: the command gets executed once the player closes the NPC dialogue window. This happens unbeknownst to the player.

Examples of NPC commands:

- The command that places an item (an apple) in the player's inventory: `/give @p apple`;
- The command that places several items in the player's inventory: `/give @p apple 10`;
- The command that places several different items in the player's inventory.

`/give @p apple`

`/give @p pumpkin`



The letter that follows the @ symbol determines who the command is going to affect:

- @p – player: nearest player;
- @r – random: random player;
- @a – all: all players;
- @e – entities: all entities;
- @s – self: the person using the command.

## Entities

Entities encompass all moving parts within the Minecraft world. Each entity has set properties. These include position, velocity, rotation, volume, health, and some effects (e.g. whether they are on fire, whether they have any status effects from items such as magic potions).

Entities include: player characters, mobs, cameras, balloons, ice bombs, boats, minecarts, arrows, eggs, snowballs, falling blocks, paintings, etc.

## Redstone

Redstone is a type of material that produces something similar to an electric current in Minecraft worlds. When you play the game in survival mode you can find redstone underground. It looks like a grey block with red spots. 

To mine redstone, you need at least an iron pickaxe. Mining the ore produces redstone dust. 

This material can transmit power like a wire. If the connection gets broken at any point the signal disappears. A redstone dust wire can only transmit power up to 15 blocks away from the power source. Powered redstone wire glows and is a bright red colour. To use redstone you need a power source, something to carry the energy, and a device that is powered by it.

Items such as levers , buttons , pressure plates  and redstone lamps  are classified as power components. You can find them in your inventory. Levers get activated when they are moved. They power the block that they are placed on and the adjacent redstone dust.

A button powers the block that it is placed on and the blocks around it. Unlike levers, buttons only transmit power for a brief moment. Pressure plates are only activated when players stand on them.

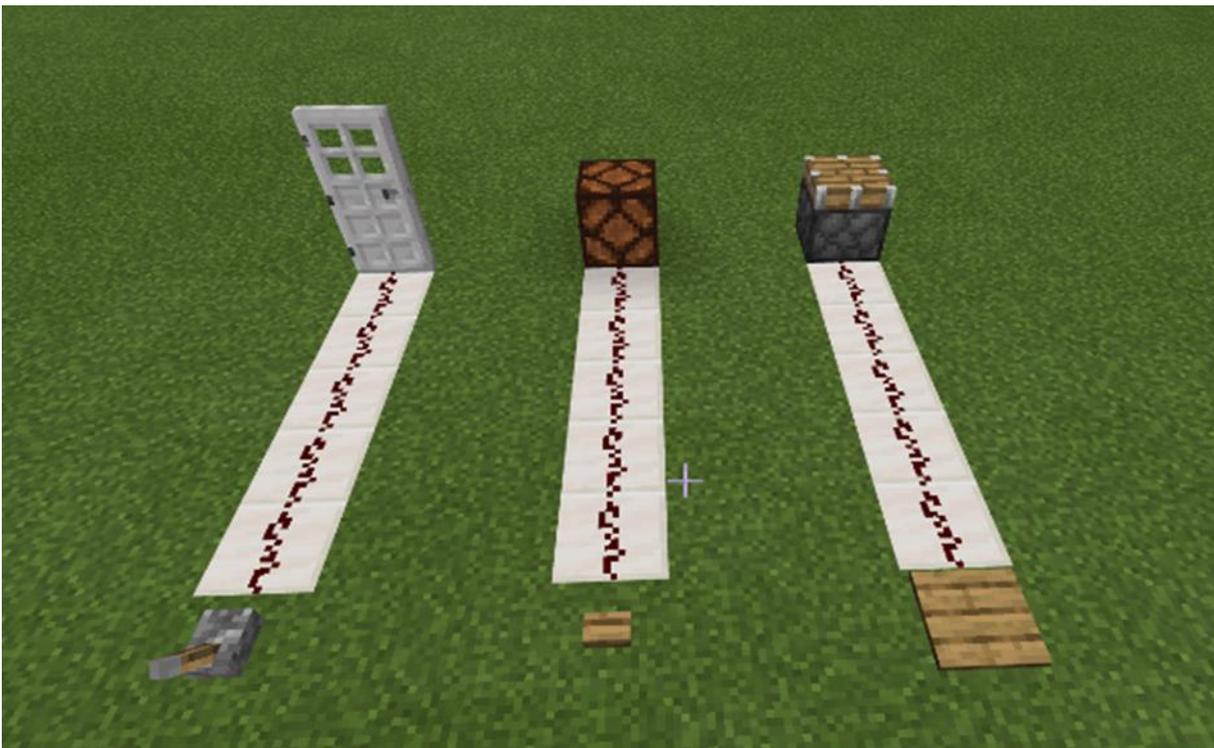


Devices powered by redstone are objects that change their state when they receive a signal. They are not specifically marked in the inventory, so you will need to memorise them. Lamps start emitting light and iron doors open (iron doors can only be opened with redstone power, you can open wooden doors by clicking on them or with a redstone power source), pistons get activated, note blocks play a musical note, minecart rails get activated, and TNT explodes.

## First example

Move the following items to your hotbar: redstone dust  a lever  a button  a wooden pressure plate,  an iron door,  a redstone lamp,  a piston  and a block of quartz 

Set down the lever, the button, and the pressure plate, making sure to leave a block of space between them. Place the iron door a few blocks away from the lever, place the redstone lamp opposite the button, and the piston across from the pressure plate. The wooden part of the piston will always face the player. You should now have 3 power sources that face 3 different devices. If you pull the lever, press the button, or step on the pressure plate, nothing will happen. You need something that will channel the energy to the devices. You achieve this by placing redstone dust between the energy source and the device it powers.



When you activate the power source, you also activate the redstone, which turns a bright red colour. The devices that we're trying to supply power to will activate. The lever gives us a current of energy which is constant. We can open and close the door as we wish by using the right mouse button. The button that turns on the redstone lamp only activates the current for a few seconds. The light turns on, but turns off again once it loses power. The piston only rises when someone stands on the pressure plate. When they step off of it, the connection gets broken and the wooden part of the piston goes down. When building these types of connections, it does not matter what source you connect to which device.

## Second example

Connect all three devices using redstone dust. All three devices should be connected to just one power source (e.g. the lever). When we move the lever all three devices activate at once and stay activated. If we then move the lever again the devices return to their original state. If we use a button instead of the lever, clicking it activates all the devices simultaneously, but they only stay activated for a few seconds. If we connect the devices to a pressure plate, all three devices get activated. They stay activated until we step off the pressure plate.



### Third example

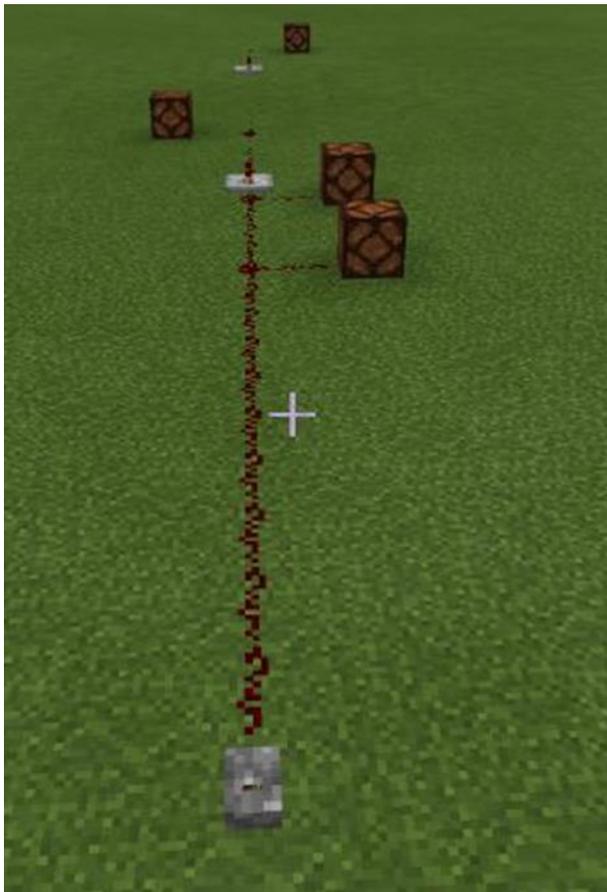
It does not matter which side we use to connect our power source to the redstone dust. Place a button, a lever, and a pressure plate. We then connect the redstone dust to the power source from two different sides. The redstone dust does not need to lead to a device. If we click on the power source, the redstone will activate, regardless of the direction it goes. How we put down redstone comes down to personal build and aesthetic preferences.



#### Fourth example: Redstone repeater

Place a lever and connect it to a long line of redstone dust. Go to the tenth block in the line of redstone dust and place a redstone lamp on the right side of it. Repeat this at the twentieth block in the line of redstone dust. When you move the switch, only the first lamp will light up. This happens because redstone dust has limited power. The dust is bright red near the lever, but gets darker as it moves away and loses power. You can amplify its power and increase its reach by adding in a redstone repeater. You can find it in your block inventory. Set it down as far away from the lever as possible, to increase the distance that the signal can travel. The item's orientation is important, as it works only when the redstone torches face the inactive redstone dust. When the repeater is turned the other way, it does not boost the signal.

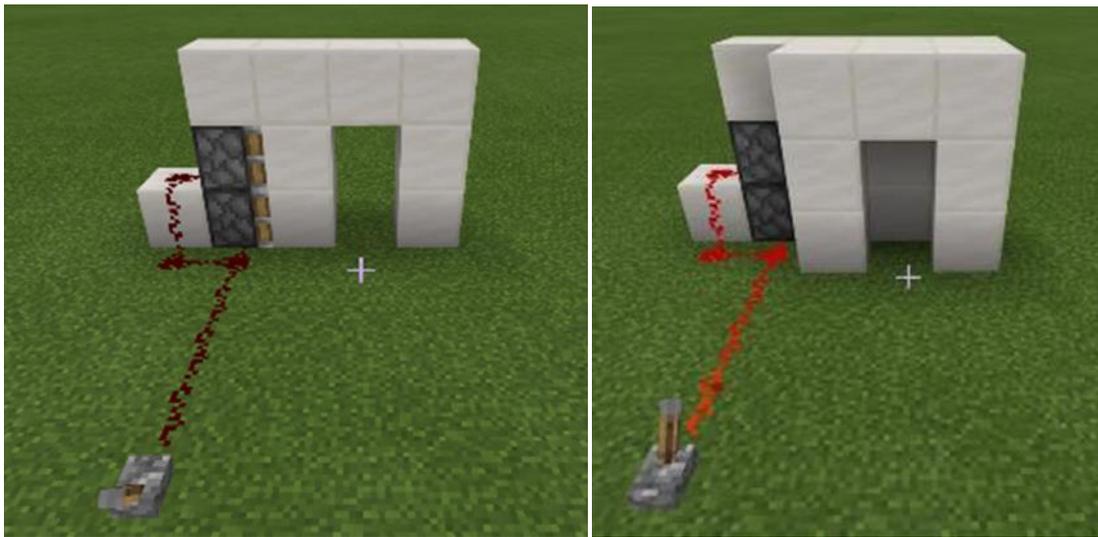
The redstone repeater is made up of two torches. One of these can be moved if you click on it. When you move a torch you create a so called signal delay. Let's move the levers on all the repeaters and see how this works. So far all the lights have turned on and off simultaneously. Now the lights should turn on one by one. Redstone repeaters let us move a torch up to three times, which lets us control the length of the delay.



## Fifth example

We will need a lever, redstone dust, two sticky pistons,  and a block of quartz  or any other type of block that transmits redstone current. In this example, we will be using a sticky piston instead of a normal one, as it is the only one the blocks can stick to. If we move the lever back to its original position, the block that is stuck to the sticky piston moves with it. A block that was placed on a regular piston would stay floating in the air. This is how you can build secret doors.

To make a secret door you place two sticky pistons on top of each other. Place the block that you want to move on the green part of the sticky piston. Place blocks of quartz around it in the shape of a tunnel or a door. Connect the two sticky pistons using redstone dust, then connect the redstone dust to the lever. You should connect the upper sticky piston to an extra block of quartz with added redstone dust (see the pictures below). To make the door look nicer and to hide the part that contains the redstone, we can add some extra blocks around the entrance.



## Help and support

If you need help, you can look up detailed instructions on how to play. You can find these by clicking the “Settings” button and moving to the bottom of the menu that is located on the left. Click the “How to play” button. This will open an encyclopaedia full of instructions and explanations.

## Additional sources

Existing lessons that you can import: <https://education.minecraft.net/class-resources/lessons/>

Chemistry lab journal: [https://education.minecraft.net/wp-content/uploads/ChemistryLab\\_Journal.pdf](https://education.minecraft.net/wp-content/uploads/ChemistryLab_Journal.pdf)

A blog about Minecraft: Education Edition: <https://education.minecraft.net/blog/>

If you need additional help, this website is available to all users: [https://aka.ms/MEE\\_New\\_Request](https://aka.ms/MEE_New_Request)

## Sources

<https://www.gamergeeks.nz/apps/minecraft/banners/letters>

<https://www.digminecraft.com/>

<https://minecraft.gamepedia.com/>

<https://educommunity.minecraft.net/>

<https://www.pcgamesn.com/minecraft/>

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<https://minecraft.fandom.com/wiki/>

<https://education.microsoft.com/en-us/learningPath/3eede2ae>

<https://portforward.com/minecraft/>