Minecraft: Education Edition

DESIGN GUIDE

June 2021

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Introduction

This document is intended to be a primer for Minecraft: Education Edition game design; building inspiring education content and encouraging builders to create immersive learning experiences by incorporating broader game design and specific to Minecraft: Education Edition.

These guidelines and design principles are from the perspective of the Principal Minecraft: Education Edition game designer and address what makes a great world for immersive and engaging learning by exposing successful design principles specific to Minecraft: Education Edition.

What is Minecraft: Education Edition?

Like Minecraft, Minecraft: Education Edition is an open-world game that promotes creativity, collaboration, and problem-solving in an immersive environment. Minecraft: Education Edition offers in-depth support for educators such as easy tutorials, classroom management tools, secure sign-in, classroom collaboration, sample lessons covering broad curriculum, and a global network of mentors and technical support. Minecraft: Education Edition officially launched November 1st, 2016 and its popularity has increased to reach millions of users each month.

The Minecraft: Education Edition mission is to build a better world through play, inspiring generations of game changers by celebrating our values of teamwork, creativity, passion, and fun.

Vive la difference! Minecraft: Education Edition Exclusive Features and their Purposes

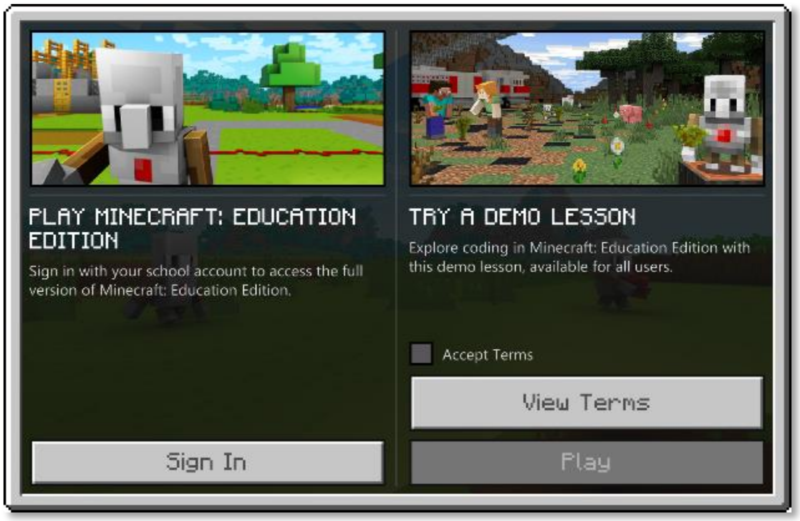
So why use Minecraft: Education Edition instead of Minecraft? Minecraft: Education Edition includes many special features designed for and targeted to educators that will help them create, share, and assess lessons, as well as expanding Minecraft gameplay with add-ons for chemistry and coding.

Minecraft: Education Edition builds skills like collaboration, communication, critical thinking, and systems thinking. Its open environment promotes experimentation, creative self-expression, and problem solving.

Some of the special features in Minecraft: Education Edition include:

Secure Sign-In

Players need a valid *Office 365* Education account to use *Minecraft: Education Edition*. Players without these credentials are welcomed to try our demo lesson.



PLAY MINECRAFT: EDUCATION EDITION

Sign in with your school account to access the full version of Minecraft: Education Edition.

Sign In

TRY A DEMO LESSON

Explore coding in Minecraft: Education Edition with this demo lesson, available for all users.

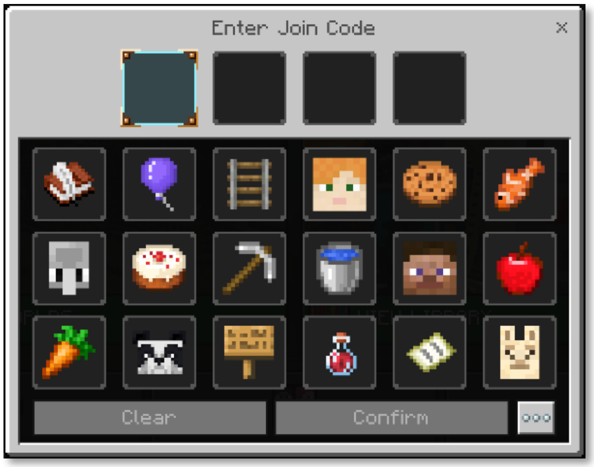
□ Accept Terms

View Terms

Play

Multiplayer Join Codes

Players need a special code provided at each multiplayer session to connect. Players cannot connect to players outside of their tenant.



Minecraft: Education Edition Mobs, Blocks, and Items

NPCs

Special Non-Player Characters (NPC) can provide instructions and narration by clicking on them. These powerful entities can also run commands and open external web links.

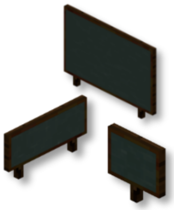
The Agent

The Agent is a mob that helps players learn coding, by getting players to code the actions on the agent. The agent can be programmed to execute a lot of tasks, like planting and harvesting, mining, chopping trees, and building (See Code Builder).

Camera and Portfolio
The camera is a Minecraft: Education Edition item that allows students to take pictures during their game session. The camera can even be placed in the world so that the player can take a “selfie”. The photos appear in another Minecraft: Education Edition item called the Portfolio, where they can be viewed or exported.

Border Blocks
Border blocks can be used to create an invisible barrier that students cannot pass. They are used to corral players or restrict access to areas. Border blocks are permission based, allowing teachers to pass through while blocking students (See World Builder permission).

Allow and Deny Blocks
Allow and Deny blocks are used to define areas where students can or cannot modify in Minecraft. Placing an Allow block will allow students to build above that block in an otherwise immutable world, while placing a Deny block will prohibit building above the that block.



Chalkboards
Chalkboards are similar to signs but are available in three sizes: The 1x1 Slate, the 2x1 Poster, and the 2x3 Board. Chalkboards support more text than size and can be edited without destroying them. Chalkboards can be locked so that only those with permission can edit them.

Minecraft: Education Edition Classroom Settings
Minecraft: Education Edition has additional settings to help educators create worlds that support their special needs. These are accessible as toggles through the Settings menu under Classroom Settings or through commands in game. Check out the Minecraft: Education Edition Classroom Settings article for the most recent list of settings. :

Minecraft: Education Edition Special Abilitie Minecraft: Education Edition has a few extra special abilities that can further adjust gameplay:

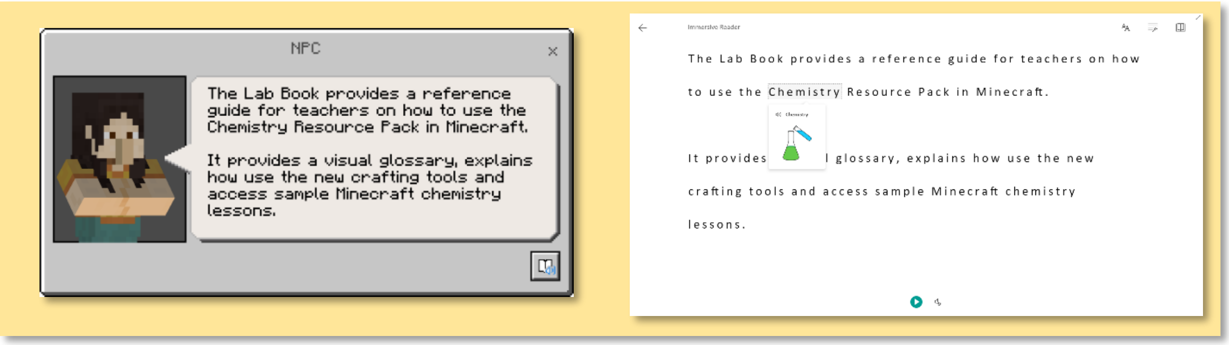
- Fly: Allows players to fly in any game mode as they do in Creative Mode.
(/ability @target mayfly)

- Mute: Enables or disables a player's ability to use in-game chat.
(/ability @target mute)

- World Builder: Grants the player World Builder permission. World Builder is a special MINECRAFT: EDUCATION EDITION permission that teachers have but can also grant to trusted students. It allows players to use special MINECRAFT: EDUCATION EDITION blocks such as Allow, Deny, and Border blocks, as well as negating their effects.
(/ability @target worldbuilder)

Minecraft: Education Edition Immersive Reader

The *Microsoft Immersive Reader* is a free tool, built into *Minecraft: Education Edition* that implements proven techniques to improve reading and writing for people regardless of their age or ability. Players can access *Immersive Reader* by either clicking on the *Immersive Reader* Icon on an NPC dialog box or by pressing the I key while targeting a sign or chalkboard:



NPC

The Lab Book provides a reference guide for teachers on how to use the Chemistry Resource Pack in Minecraft.

It provides a visual glossary, explains how use the new crafting tools and access sample Minecraft chemistry lessons.

Immersive Reader

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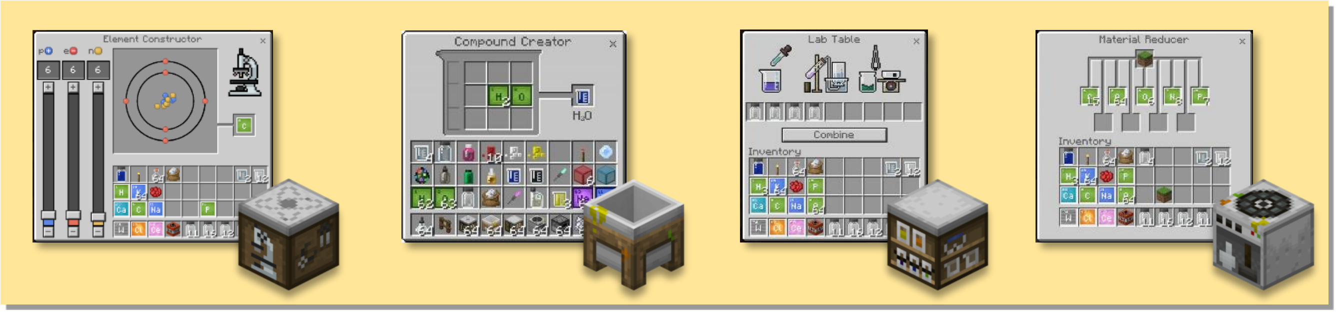
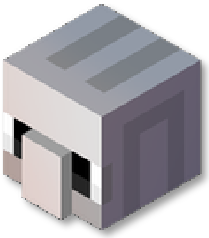
Minecraft: Education Edition Chemistry Update

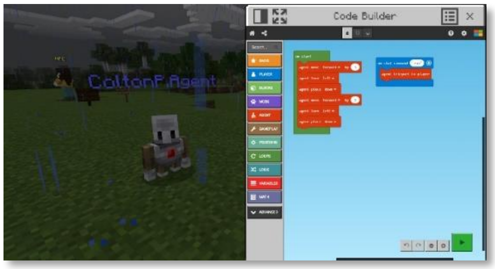
Minecraft: Education Edition has a set of dedicated tools for teaching chemistry. The tools include the *Element Constructor*, the *Compound Creator*, the *Lab Table*, and the *Material Reducer*. Together, these tools allow players to create the 118 elements of the periodic table and use those elements to create compounds and other products:



Minecraft: Education Edition Code Builder

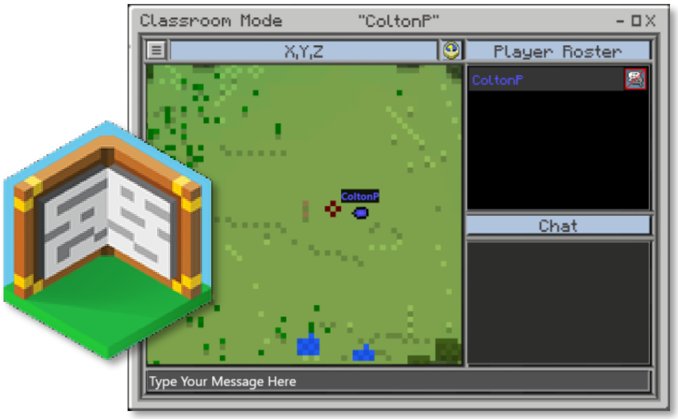
Code Builder for Minecraft is a feature that allows educators and students to write code to explore, create, and learn in a Minecraft world. Partnering with learn-to-code platform *Microsoft MakeCode*, players can not only develop computational thinking but can also apply their creations across the curriculum. Players can launch *Code Builder* in-game by pressing the C key on keyboard or the *Agent* Icon on touch. Launching *Code Builder* will automatically spawn the *Agent*, your Minecraft coding companion, at your location. Find more Code Builder help on the Minecraft: Education Edition Code Builder web page.





Minecraft: Education Edition Classroom Mode

Classroom Mode is a companion application for Minecraft: Education Edition. With *Classroom Mode*, you can access a range of features especially designed to interact with students while hosting a multiplayer game by managing settings from a central user interface. Features include an interactive map, global pause, in-game clock, chat controls, and common gameplay modifier toggles. Find more Classroom Mode information on the Minecraft: Education Edition Classroom Mode web page.



Keepin’ it Real: The Importance of Staying Authentically Minecraft

There are many small differences between Minecraft and Minecraft: Education Edition that we will describe below, but the heart of the game is still, and should always remain, authentically Minecraft. Keeping true to the original game is not only important for maintaining brand cohesion and public awareness but is crucial in retaining the same magic that made players fall in love with Minecraft in the first place. Minecraft: Education Edition should remain rooted to the broader Minecraft experience in terms of presentation, function, or content; it should feel familiar to all ages and groups.

Players engaging with Minecraft: Education Edition should still feel they are playing Minecraft, the same fun game they love playing at home, with their friends, watching on YouTube, etc. A student should never think playing Minecraft: Education Edition lesson is “uncool,” especially if they are an avid Minecraft player. While most of these considerations fall on the Minecraft: Education Edition team, being aware of this direction when creating content can be a healthy exercise.

Minecraft Design Principles: Overview

Minecraft is many things. It is a game about exploration and adventure. It celebrates creativity and ingenuity. It can be scary, *kimo-kawaii (Japanese for "gross cute"),* and frankly, a bit ridiculous. All these unique attributes and more come together to create our beloved Minecraft. When we create new features, we acknowledge a list of Minecraft guiding principles that keep us aligned with our design vision. Similarly, you can also apply these design processes to the content that you produce as well.

Branching Dialogue is a new feature for Minecraft non-player characters (NPCs). It allows for the creation of a dynamic NPC dialogue script that can provide updated dialogue based off a players' in-game actions or responses. This NPC Branching Dialog Branching User Guide includes an overview of the feature as well as a tutorial with step-by-step instructions.

Minecraft: Education Edition Design

Minecraft: Education Edition content sometimes includes supplemental elements in addition to the actual Minecraft world file (or a "*mcworld*" as we call them). These elements may include lesson plans, external links, coding tutorials, etc. Additionally, designing content for Minecraft: Education Edition presents its own challenges beyond what you may find designing content for the *Minecraft Marketplace*. Among these are special considerations for scope, scale, difficulty, assessment, and reliability.

Scope

Scope is defined as the amount of content you can put in your lesson before quality begins to suffer. Content includes all your learning objectives, activities, chapters, as well as your world build, additional art, features, and mechanics. Scope is everything that "remains in view," thus anything not in view would be considered "out of scope." Scope is the first, and arguably the hardest, hurdle you'll encounter in content creation. With experience this will become easier, but even experienced creators can over scope content.

Best Practices for Managing Scope

- ***Define*** – Before you begin, detail your objectives, desires, and requirements. Determine your scale, narrative, and difficulty. Often just having this high-level list will allow you to make early assessments and avoid feature creep. It's easier to scale back a design in this stage than once you've begun production.

- ***Evaluate*** – Before you implement your plans, evaluate their merits. Expand and contract on your concepts if need be, focusing on elements that not only support your goals but are also doable in the given time constraints. It's better to find something isn't worth the time investment earlier than later!

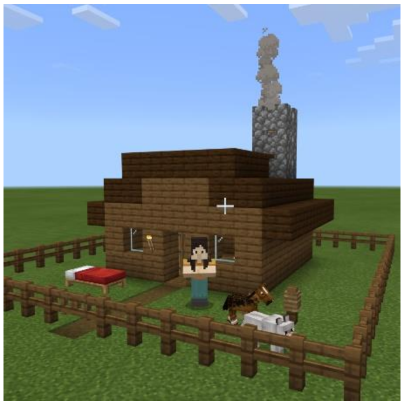
- ***Control*** – As you proceed with your content creation, maintain the scope of your vision. Evaluate fast and often. Avoid feature creep traps. Make sure that changes or additions are not watered down or too heavy. Challenge your content by "looking through the lens" and making sure the focus is on what is most important and is not distracted by other elements of your design.

Scale

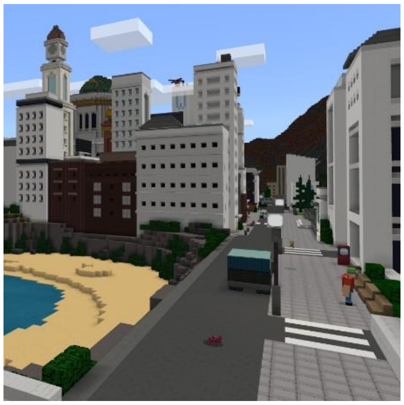
One of the more challenging aspects of creating a Minecraft: Education Edition lesson world is dealing with scale. Not just the complexity or size of a project, which I would say is covered under scope, but the actual build scale of your Minecraft world and the value you have decided to attribute to a single block. Build Scale should also be considered in your scope, as it will determine how players will interact with your world and will affect the length of your lesson.

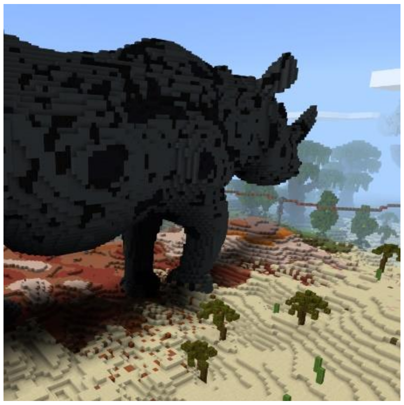
As you can build anything that your heart desires, the size of a Minecraft world can be tiny or gigantic. Minecraft's scale unit is the block. A block is one meter squared (or about 3.3 feet). The world build height is 256 meters (840 feet) high. Players are approximately two meters (6.6 feet) tall, as are doors.

This is what we call immersion scale. Although most players are familiar with immersion scale, creators may imagine a block to be more or less than a meter. Here are some examples of scale in Minecraft:

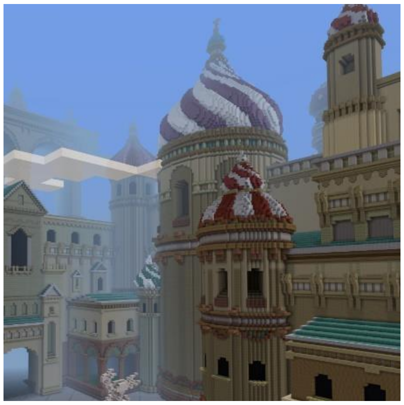


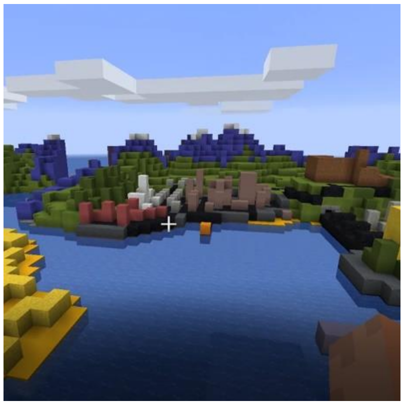
Immersion Scale – When a player builds a house scale to the door block, or creates a bedroom scale to a bed, they are building in an immersion scale that resonates with our own "real-world scale." Again, this is one meter per block. Structures built in an immersion scale look similarly sized to how they would look to us in our own world. This scale is very relatable to players and is most commonly used. It has the added benefit of working with Minecraft items such as torches, doors, fences, and mobs, all of which are scaled appropriately to the player.



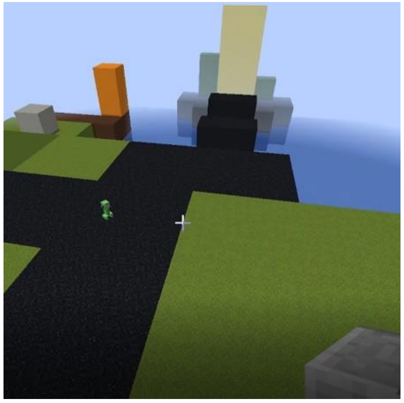


Detail Scale – When creators want to increase the detail in their builds, they will sometimes change the world scale by having a block represent a different measurement other than a meter. For example, if an immersion scale doorway is two blocks high, a larger scale building might have a six-block high doorway if they imagine one block is a foot (12 inches). Creators increase scale to make very detailed models and pixel art. Larger builds are often intended to be viewed from a far such as from a specific vantage point or from the air in Creative Mode.





Miniature Scale – You can also imagine that a block represents more than a meter. Maps aren't usually designed to be played in a smaller scale, but it can be a good way to layout a large world. In this space allocation map example, we established the block scale of one block equals 10 blocks (translated from our graph paper layout). When we were pleased with the layout, we used special tools to change the scale, increasing it to match immersion scale, which we used as a guide to build our detailed world over.



As you can see, while there are no set rules on scale, there are considerations to be conscious of when designing your worlds. Scale can determine the time it takes to build your lesson as well as the time it takes to complete your lesson. Here are some helpful guidelines for dealing with scale:

- ***Scope your Scale***
  Determine you scale in the planning phase if possible. Create sketches and mockups of your world, build space allocation maps, gray box your layout before you commit to details.

- ***Know Your (time) Restraints***
  Understanding how much time your lesson activities take will help you establish the size of your map. A player can travel about 250 blocks in a minute. Account for travel time in addition to activity time to make sure your lesson can be completed inside the time allotted.

- ***Don't Byte off more than you can Download***
  Another scale consideration to be aware of is file size. The larger the map, the longer the download time, the more hard-drive storage needed, and the more power the player's computer will need to process the world. Large maps that run fine on your tricked out dev machines may grind to a halt on a Chromebook.

- ***Build Big. Play Small***
  Large scale or detailed builds often create impressive set pieces but might be a detriment to your lesson if they add unnecessary navigation or unwanted distractions. Make sure that the scale supports the gameplay you want. Don't build a large area if there is nothing to do but walk from point to point. If you want to build detailed models, think of ways that the player can enjoy them, but still complete the lesson in the time frame.

- ***Gettin' Around***
  If your world is large, and travelling is core to your experience, consider alternative ways to explore your lesson. Include mounts like horses or use minecarts to travel between large sections. You can also teleport players where they need to go, skipping travel time all together if it fits your design goals.

Difficulty

When speaking of "difficulty" in video games, we might not be talking about the same thing. Difficulty could be referring to how challenging a game is overall ("Dark Souls is a difficult game!"), the hardships of a game mechanic ("Double jumping is difficult"), or a game setting ("I only play on hard difficulty"). While you don't have to worry about Minecraft's difficulty design, you should design your content aware of it.

The goal of Minecraft: Education Edition content should be to challenge the player's intellect, not their parkour skills. Our user base is comprised of players of vastly varying skill levels, from first time players to expert Minecrafters. Without knowing your precise audience, it is hard to build content that works for everyone. However, it is easy to unintentionally add difficulty through poor messaging, level design, or build execution. To reduce the chances of this, we suggest you go with designs that feature fun and engaging navigation, and in-game challenges that are easier and more accessible to a larger swath of our players.

Navigation

"Walking is not gameplay." Why would you want to walk when you could hop, skip, or jump? Take that statement to heart when you are designing your world. Offer your players elevation changes, twists, and turns, and unique traversal opportunities such as using vines and ladders to climb a cliff face or adding a small stream or river to ford. It doesn't take much effort to make traversal more fun, but you should also be careful not to lean too far in the other direction and create a parkour gymnasium. When designing Education worlds, remember that your players will have a diverse skillset, so avoid tricky jumps, traps with difficult timing, confusing paths. Navigation in Minecraft: Education Edition should be fun with low risk for harm or failure, where a missed jump is inconsequential at best and requires a second attempt at worst.

DO: Create interesting navigation opportunities for your players
DO NOT: Create a parkour gym that alienates a percentage of your audience

Build Big, Play Small

The Build Big, Play Small turn of phrase reflects the philosophy that it is okay to build a large, beautiful world for your lessons while keeping gameplay contained and accessible for classroom use. Navigating a large level takes time, so be cautious of how scale can extend your lesson length. You don't need to create a giant world or unique structures to have an engaging lesson, but if you do decide to go big, make sure to avoid the pitfalls of bad navigation by keeping the actual gameplay area concise and time-scaled correctly.

Exploration and discovery are both hallmarks of Minecraft. Minecraft worlds sprawl never-ending in all directions, offering unlimited opportunities for adventure. However, this is not always the most desirable situation for a classroom setting. Fortunately, Minecraft: Education Edition has tools to help you keep players contained while still providing fun and freedom within those confines.

DO: Create a big, beautiful worlds that visually excite your players
DO NOT: Confuse scenery for content

Visual Story Telling

Visual story telling is more than “communicating a message with images”, it is an important part of our lives. It involves the shorthand we have developed to rapidly decipher and comprehend what various colors, shapes, and sizes mean to our survival. As we have evolved, our dangers have changed, but we can see the inherited design carry over, such as the color red as a warning for poisonous berries or as a warning for you to stop your car.

Video games have long relied on communicating information visually to the player about their environment through color, shape, and size. Minecraft, too, has its own visual language, one that sometimes mimics our real-world understandings, but also relies on lessons learned from in-game experiences.

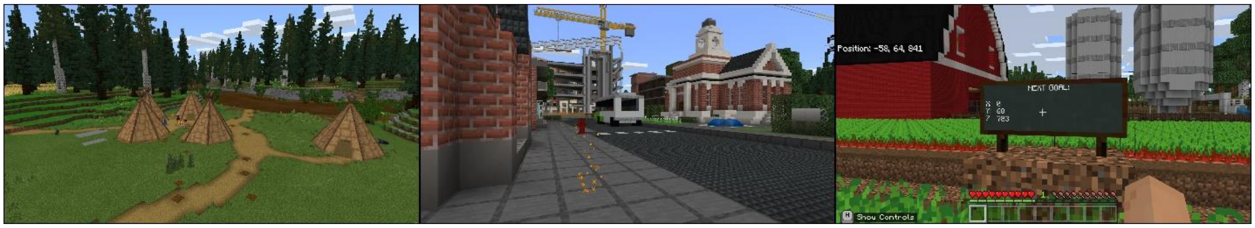
One of the first mechanics players pick up on is the jump. Jumping is an important feature in Minecraft as it allows the player to reach new areas, avoid pitfalls, and gain a tactical advantage in combat. Players quickly learn the height and distance of their jump and can determine quickly and with certainty if a jump is possible just by looking at it. We can use this understanding to clearly define areas that players can recognize as negotiable simply by using the visual shortcuts of height or material.

Depending on your lesson, you may want to lead players to particular points of interest in your world, or at least steer them in the right direction. Using the visual language available to you in Minecraft, you can create deterrents that still feel natural, but keep the player moving toward the goals that you have laid out for them. I call this technique Wrangling.

DO: Think about how to communicate using the visual language of Minecraft in your builds
DO NOT: Lose your players trust by misusing or abusing their established knowledge

Wrangle

There are several methods that you can use to keep your players focused and on the right track. Below are some simple yet powerful techniques that you can use to keep players from getting lost, confused, or disinterested.



Examples of Wrangling techniques: Paths, Breadcrumbs, Waypoints

- ***Paths*** – Pathing involves leading the player to areas using clearly defined pathways or roads, or by obstructions that flank them such as rivers or fences. Paths are a great way to illustrate where players should go, especially when combined with some of these other techniques.

- ***Breadcrumbs*** - Much like Hansel and Gretel left behind a trail of breadcrumbs to lead their way, so can you. Create a trail to lead the player to where you want them to go using items, blocks, particles, mobs, or any combination of the like. These items can be collectable or simply used to lead the player.

- ***Landmarks*** – Landmarks help players remember where they have been, know where they are going, and deduct where they are. Landmarks work best when they have unique features that help players identify them. Landmarks can be geographical natural such as a mountain or river; man-made, like a statue or a house; or conceptual like a beacon of light or a bouncing arrow icon.

- ***Waypoints*** – Many games use a waypoint system to lead players to a specific location. Way-pointing in games is often accomplished by using conceptual landmarking in cooperation with breadcrumbing or pathing. In Minecraft we can also use our XYZ Coordinates as a known location, like the longitude and latitude values of a GPS. Waypoints are great ways to incrementally guide players to their destinations.

DO: Create clear guidance to goals and points of interest
DO NOT: Substitute handholding or uninteresting design for simplicity and ease of use

Corral

While the freedom afforded from an open world experience is part of the magic and appeal of Minecraft, you may find it provides too large of a distraction or requires too much player management for your lesson. If that is the case, corralling your players might help.

Corralling is a wrangling technique of creating perimeters that contain or direct players in your world. Perimeters are any boundaries that you establish to discourage or prevent players from leaving the defined playfield. Whether they physically prevent players from bypassing them, or simply provide a visual direction, the effectiveness of the perimeter is up to you. Here are some examples of perimeters that might help you in your lesson build.

Soft Perimeters

Soft Perimeters visually corral the player, often more psychologically than physically. Soft perimeters are great for providing direction and guidance while appearing more natural and unobtrusive. Standard fences and walls help establish boundaries but can become compromised. Using environmental obstacles such as a river can help guide the player but will not completely impede their travel. Examples of soft perimeters include:

- Fences
- Walls
- Hedges
- Environmental obstacles (Cliffs, rivers, forests, etc.)

Hard Perimeters

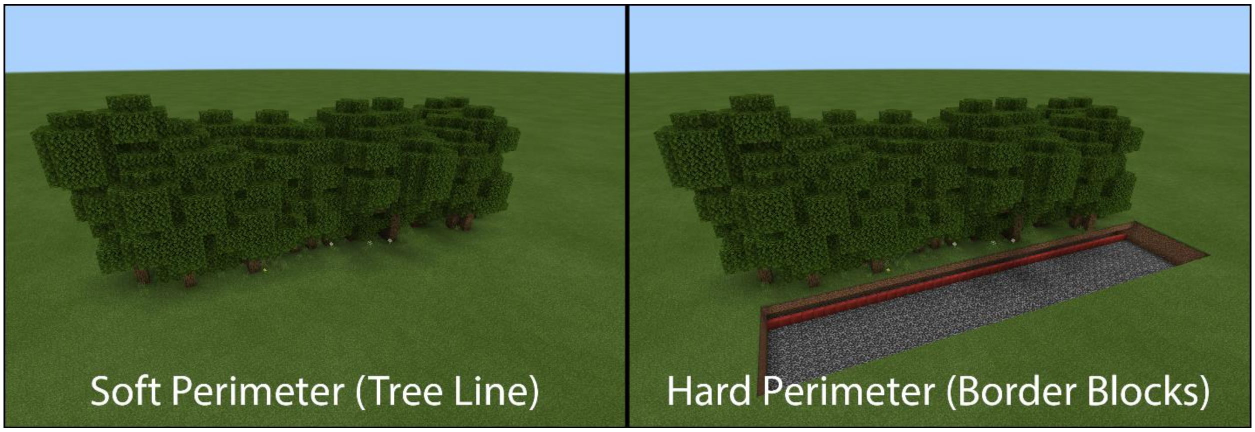
Hard Perimeters corral the player with complete efficiency. They are virtually impassable, or at least they should be if used properly. Hard Perimeters constrain the playfield to your desired size and shape and prohibit travel beyond their boundaries. Here are some examples of Hard Perimeters:

- Border Blocks
- Barrier Blocks
- Hazardous obstacles (Lava, fire, spikes, etc.)

Hard Perimeters can be invisible to the player, such as a barrier block wall or border blocks hidden underground, but they work best when they can be perceived by the player. Hard Perimeters aren't just block types; they can be constructed as well. A two-block high wall is essentially a Hard Perimeter if the player's relationship to that wall doesn't change.

Best Practices: Perimeters

Using invisible collision is not only lazy and uninspired, but it also creates trust issues between the player and the world. The best practice involves mixing Hard and Soft Perimeters to provide the player a natural looking perimeter that is still impenetrable. Here are some examples:



The forest above is thick and uninviting. Alone, it is a deterrent, but it won't actually stop those who seek to trespass. However, if we hide border blocks below the ground where the forest begins, we create a hard perimeter, and suddenly the concept of an impenetrable forest becomes clear to our players, who now accept the woods as a boundary to their world. By mixing Soft and Hard perimeters, we have defined our play area without losing the players trust, allowing them to rationalize and understand the boundary as a game rule rather than some arbitrary barricade they will seek to escape.

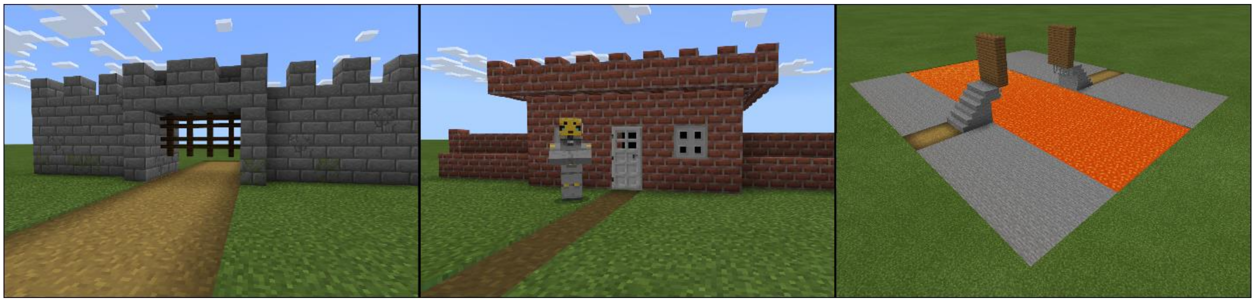
DO: Use corralling to wrangle your players
DO NOT: Use corralling to imprison your players

Gate

Gating is technique used to corral players, but only temporarily. If your lesson has any sort of linear progression, you might find that gating is a valuable tool to manage player progression. A good gate should halt the player until they have earned the right to pass, only to be overcome when the player provides the proper criteria you have decided on. It should not be able to be circumvented through means you did not anticipate or desire. Here are some examples of various gates that may inspire you in your lessons:

- ***The Gate*** – A literal barrier, that opens, raises, lowers, or somehow allows passage through
- ***The Bridge*** – A structure that lowers, raises, extends, or connects the player to progress

- ***The Wall*** – A natural or man-made obstacle that impedes progress until modified
- ***The Door*** – A locked door that blocks progression until the player finds the means to unlock it
- ***The Troll*** – A character that the player must negotiate, either by wit or wiles, to continue
- ***The Key*** – An item that the player receives that becomes the tool that lets them move forward



Examples of Gating techniques: Gate, Door, Bridge

As you can see, there is no shortage of ideas for gates. The most important feature of your gate is that it allows you to control the player's progression. Maybe that gate is an in-game message that tells the player to wait until instructed to move on, or maybe it's a complex assessment detection system that prevents progress until specific success criteria is met. Yes, gating can be tricky in Minecraft, as effective gates often require some sort of set up or mechanics to work properly, but it can be worth the effort. Often the hardest part in creating a gate is assessing if the player has achieved the results that you are looking for and using that information to open your gate. We discuss different embedded assessment detection techniques in the Assessment section.

Time Management

Time. The fourth dimension… and the most overlooked aspect of creating a successfully curated classroom experience in Minecraft. In its purest form, Minecraft is a slow-paced experience. That pacing is an intrinsic design feature of its survival-style gameplay and an important factor to its success. Players are rewarded for their curiosity and experimentation, but that indulgence takes TIME. Because of this, it is quite easy to play Minecraft for several hours without noticing that time slipping away in the real world. While this time suck makes for a great weekend escape romping through your Realm, in the classroom, time is of the essence, and your mastery of time management techniques will make or break the players' experience.

So, let's talk about time, or more to the point, the player's time. When creating a world, we should try to predict how long the player will be engaged in our world and synchronize that experience to coincide with the player's allotment of classroom playtime. Let's call this engagement time a Session. You can design your lessons to be as long or short as you like, but for best results, the lesson and the session times should closely align.

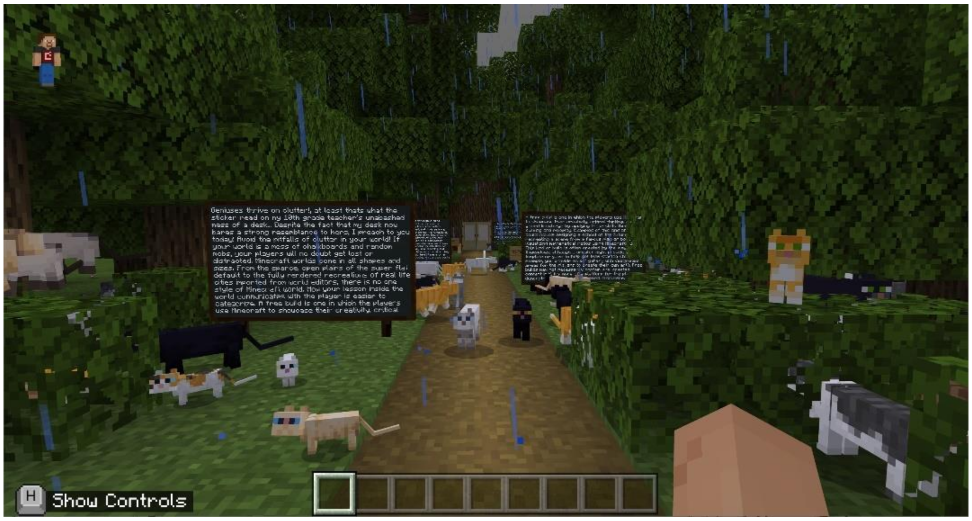
Classrooms run on schedules where time is assigned for activities on a daily agenda. A common time block increment for a classroom Minecraft session is about an hour. Obviously, this is an example, not a rule. On a long-term project more time may be given, with players encouraged to continue their progress as homework or a weekend activity. Recognizing that the time allocated to play Minecraft in the classroom is generally one hour, should your lesson take an hour to play? Not necessarily. Typically, time will be needed to introduce the lesson and discuss setup or technical issues before the players jump in. This time can eat away anywhere from 5 to 15 minutes of the session. Likewise, anticipate a 5-to-10-minute warning or wrap up as well. That could be 20 minutes of session time not spent on your lesson. It's for these reasons that we recommend paying extra attention to time management features in your lesson and provide a 'start-to-finish' experience for your players that will allow them to get the most out of the time they have been given as well as quickly pick up where they left off in their next session.

Design Tips for Time Management in your World

- *Wrangle* your players to avoid confusion or distraction
- Use *Build Big, Play Small* techniques to reduce travel time in your world
- Play test your world with a stopwatch to determine your lesson of activity length
- Break up lessons into activities that can be accomplished in a shorter time frame
- Provide check points that allow players to easily jump in and out of your lesson

Visual Clutter

"Geniuses thrive on clutter!" at least that's what the sticker said on my 10th grade teacher's desk… Even though my desk now bears a resemblance to hers, I still recommend avoiding the pitfalls of cluttering up your world. Worlds a mess with chalkboards, signs, and random mobs, often leave players lost or distracted.

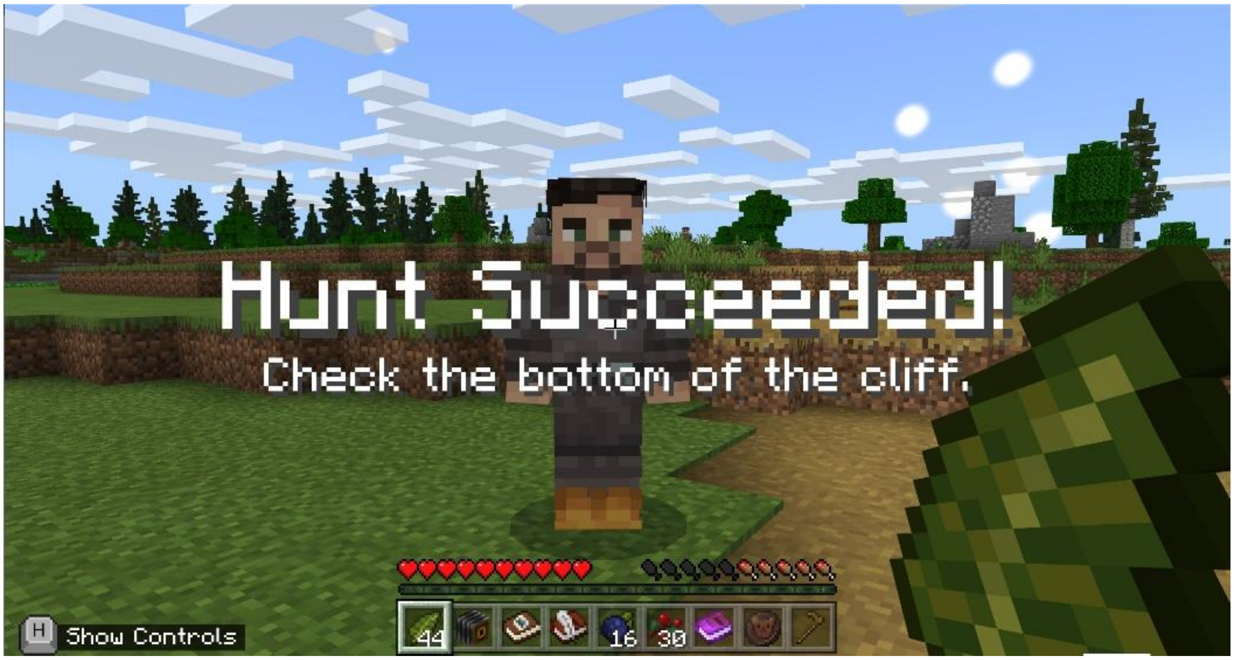


Geniuses thrive on clutter!, at least thats what the sticker read on my 10th grade teacher's unabashed mess of a desk.. Despite the fact that my desk now bares a strong resemblance to hers, I preach to you today! Avoid the pitfalls of clutter in your world! If your world is a mess of chalkboards and random mobs, your players will no doubt get lost or distracted. Minecraft worlds come in all shapes and sizes. From the sparce, open plains of the super flat default to the fully rendered recreations of real life cities imported from world editors, there is no one style of Minecraft world. How your lesson inside the world communicates with the player is easier to categorize. A free build is one in which the players use Minecraft to showcase their creativity, critical

Distracted much?

It's not just the environment that can get cluttered. Chalkboards can display a lot of text. Large walls of text are often overwhelming and thereby dismissed. Wordy instructions and bad pagination can turn important information into ignored information. It is better to include more signs with less text than one large sign packed with information. This can be true of NPC dialogue as well. Consider breaking up dialogue into digestible segments, utilizing branching dialogue trees to help avoid text clutter.

Pop-up text achieved through title commands can be a powerful tool for instructing your player but can also be abused. Keep title messages short, as to not run off the screen, and use them at times when they aren't going to detract or obscure important gameplay in your world.



Hunt Succeeded!

Check the bottom of the cliff.

Crisp titles and subtitles make for great in-game messaging

DO: Use succinct wordsmithing and efficient pagination in your in-game messaging
DO NOT: Clutter your world with distracting mobs, walls of text, or excessive onscreen interrupts

Lesson Types

Minecraft worlds come in all shapes and sizes. From the sparce, open plains of the super flat default to the fully rendered recreations of real-life cities imported from world editors, there is no one style of Minecraft world.

How your lesson inside the world communicates with the player is easier to categorize. The three types of Minecraft: Education Edition lessons we mainly encounter are the Expression Build, the Museum Build, or the Experience Build.

The Expression Build

An Expression build is one in which the players use Minecraft to showcase their creativity, critical thinking, and gained knowledge by applying those skills through building and roleplay. Examples of Expression build activities include designing a school of the future, recreating a scene from a famous play or book, or visualizing mathematical ratios using Minecraft mobs. This kind of build is often created by the players themselves, although a creator might provide a template or guide to help get them started (for example, you provide an art gallery with designated areas for the players to create their own art). Expression builds do not necessarily contain pre-constructed educational content inside of them, instead they more of a platform for the player to demonstrate what they've learned elsewhere or experiment in a fun, shared space.

Here are some examples of Expression Builds from our library:

- ***Build a Treehouse***
- ***Back to School!***
- ***Starter Town***

The Museum Build

Museum builds provide learning through in game depictions or displays and could be curated or self-guided. Museum builds may have interactive elements to help with engagement, but their primary purpose is to teach through examples, re-creations, and the visualization of how things work. Examples of Museum builds include a reenactment of a famous event in history, a cross section of a combustion engine, or an aquarium full of aquatic species. These type of builds often rely on detailed builds that not only include the information they are teaching, but areas that allow the students to expand on what they have learned.

Here are some examples of Museum Builds from our library:

- ***Sustainability City***
- ***Lessons in Good Trouble***
- ***The Human Eye***

The Experience Build

Experience builds take players on a scripted learning journey, focusing on curated world interactions and learnings through paced or gated in-game activities or understandings. They often rely on Minecraft mechanics to help assess player activity and keep them on the *golden path*, providing an engaging and compelling experience. Examples include a game show where players solve puzzles to progress to the next round, a scavenger hunt where students search for items related to a lesson, or an adventure where players use learn to use coding techniques to save the kingdom.

Here are some examples of Experience Builds from our library:

- ***Museum Heist***
- ***Manito Ahbee Aki***
- ***The Mindful Knight***

Minecraft Content Requirements

Minecraft Content Requirements (MCRs) consist of policies, technical requirements, and necessary product components that all content partners must conform to ensure that all Minecraft content is stable, reliable, and provides a consistent, safe, secure, and enjoyable player experience.

The MCRs were created for the Bedrock Minecraft Marketplace, and while Minecraft: Education Edition hasn't adopted all of the MCRs, abiding by these guidelines will help create better content that will be aligned and ready for the Minecraft Marketplace Education section.

Below is a list of the base content requirements and a brief description of their purpose applicable to Minecraft: Education Edition content.

- **Content Stability** – Content must not cause the game to hang or crash.
- **Complete Content Submissions** – Content must be functionally complete and testable when they are submitted and must be packaged into the appropriate file format.
- **Metadata Accurately Represents Content** – Content may not use a name or icon similar to that of other content, and may not claim to be from a company, government body, or other entity if you do not have permission to make that representation.
- **Rating Appropriate Content** – Content must fit within the Minecraft E10+ and PEGI 7 rating.
- **Player and Device Security** – Content must not jeopardize or compromise player security, or the security or functionality of the device, system, or related systems, and must not have the potential to cause harm to players or any other person.
- **Official Naming Standards** – Content must not misuse Minecraft or Xbox terminology.
- **Validation Tool Pass** – Minecraft will provide a tool to validate that content is properly configured and the manifests can be parsed. Submitted content must pass validation with no errors in this tool.
- **Reserved Assets in Texture Pack** – Some text and images in the game must not be changed, such as Coin text and images or text and images describing other store content. Additionally, you may not remove edition subtitles from the Minecraft Logo and will need approval of changes before modifying the Minecraft Logo in general.

As mentioned before, these standards were developed for the Marketplace, and there are some obvious as well as nuanced differences between Minecraft and Minecraft: Education Edition that allows for flexibility in your content. For example, we currently don't support the distribution of Skin or Texture Packs, nor harshly enforce rules on Texture Pack conversion or worlds that might be considered Mash-ups. All Minecraft: Education Edition content goes through a review process, and decisions on the value or inclusion of contentious or possibly divisive subject matter will be handled on a case-by-case basis.

Overall, it is good to align with the Minecraft Content Requirements where applicable, especially if you aspire to see your content distributed in the Minecraft Marketplace. Content that is contracted for or created by Minecraft will often be held to these standards as the baseline to our normal review process that includes sign offs on its educational merits, gameplay design, and artistic quality.

Player Assessment

Assessment is a term used by both teachers and game designers. As an educator, you want to assess that your students understand the material you've assigned. As a creator, you want to assess that the players have completed an activity or goal in your world. While both rely on the player demonstrating that they have gained knowledge by successfully completing the lessons, the creator must figure out how to use Minecraft mechanics to detect the successful application of this knowledge. Player assessment is an important aspect for both educator and creator, so let's discuss both perspectives.

Embedded Assessment

Successful games test the player as they progress by designing challenges around newly acquired skills. This is referred to as Embedded Assessment. A simple example of this is learning how to jump. First the skill is introduced to the player ("Press A to Jump") and they are given a safe space to try it out. Then they are provided with areas where jumping would be useful, but not required (such as reaching a hidden collectible). Finally, the player reaches an area where they must jump to continue progressing forward. Successfully completing the area demonstrates competency of the skill, as the player cannot move on without learning how to jump.

Embedded Assessment works great in Minecraft: Education Edition lessons too! Lessons can be designed to allow players to show their knowledge in exciting ways that are more engaging than writing a paper or filling out a quiz. Using embedded assessment in your lessons may have students not even realizing that they are learning as they apply their newly gained skills in their world. One of my favorite examples of this comes not from a game, but from a movie.

"The right path is the path you PICK."

A Note on Assessment and Feedback:

Assessment and feedback are important tools for learning. Good assessment has a two-fold purpose:

Firstly, it should give immediate feedback to the learner (player) as to whether they have the knowledge, understanding and skills they complete an activity in the game. If they do not, they fail and must try again. Failure is not a bad thing, provided there is constructive feedback immediately that allows learners (players) to develop their knowledge, understanding and skills to be able to complete the activity. Feedback should encourage perseverance and tenacity by focusing on the effort a leaner (player) is giving to completing the activity. Failure and feedback can also have comedy or character actions that are unique, making failure fun and amusing rather than disappointing. Great computer games do this successfully, so great Minecraft learning experiences should be no different.

Secondly, assessment should inform the teacher, so that they can provide support. When a child fails, the teacher may not immediately need to provide support as resilience may come about for repeated attempts at the same task. However, after a period the teacher may identify a knowledge or understanding gap and be able to support the learner by addressing this so that they can progress. Great games can provide a feedback that encourages learners to seek feedback from their community, including their teachers and other students, after successive attempts and failure at an activity. This simulates real-world experiences and encourages confidence in seeking help to progress.

Overall, assessment should always be aligned to the learning objectives of the game. Assessment that is not aligned can become confusing and lead to disengagement with the game.

In the film *Indiana Jones and the Last Crusade,* Indy must complete a series of challenges to reach the *Holy Grail*. One of the challenges involved stepping on particular floor tiles to reach the other side. Indy ponders the riddle and concludes that the tiles he must step on spell out *'Jehovah.'* He tests his theory, stepping on the letter "J." The tile crumbles away, nearly sending him to his doom. Indy then realizes that he has missed an important element of the puzzle: In the Latin alphabet, "*Jehovah*" begins with an "I." To this day, I still remember that piece of trivia! I wonder how rememberable that scene would have been if Indy had solved the riddle on paper and proceeded to step on the correct tiles rather than making the near fatal mistake that jarred his memory. There was something about the trial-and-error aspect and the risk of failure that made it such a memorable learning experience for me. A challenge like this would be easy to re-create in Minecraft, and I'm sure the players would not only enjoy showing off their knowledge by completing the puzzle but would be left with lasting memories that reinforce those learnings as well.

So now that we have talked about player assessment from the education viewpoint, let's talk about how creators can use Minecraft mechanics and game design techniques to assess what the players have accomplished in the game world.

When building a lesson, the creator may want to inform the player when they have successfully completed a task or gate their progress until a task is complete. The challenge here really is learning what tools and techniques Minecraft has available to you and what circumstances you can detect.

Assessment Tools

There are a variety of devices available in Minecraft: Education Edition that will help you with player assessment and feedback. These items range from in-game items like buttons or the camera to command oriented tools such as NPCs and Command Blocks. Here are some of the Minecraft items you could use to detect player activity.

- ***NPCs***
  NPC can provide instructions, information, and confirmation dialogue to players. They can also run commands via button presses or simple interaction. You can use NPCs to quiz or challenge players, great ways to gate player progression and provide assessment.

- ***Book and Quill***
  The Book and Quill is a journal that allows players to recount their experiences, craft short stories, or leave behind notes for other players. They can also include photos they have taken with the camera and export out their book as a PDF to share with their teacher for assessment.

- ***Camera and Portfolio***
  The Camera allows players to document their experiences with photos. These photos can be shared for assessment through their inclusion in either the Book and Quill (which allows them to be used in connection with text) or the Portfolio, which collects and displays all of the players' photos and can be exported out as well.

- ***Signs and Chalkboards***
  Signs and Chalkboards can be used to provide the same sort of textual information as NPCs but without interactivity. Signs can display short, un-editable messages, while Chalkboards come in three sizes, support a large amount of text, and are able to be edited by players.

- ***Buttons, Levers, Pressure Plates***
  These are items in-game that can be created by players and produce a Redstone Signal when interacted with. Buttons send a short pulse, levers toggle the signal on and off, and pressure plates send a signal while being depressed. You can use these signals to operate certain in game items such as doors or pistons, as well as supply power to creator placed command blocks.

- ***Special Detection Items***
  There are several other items that can generate a Redstone signal that can be exploited by the player or creator. Some items produce a signal when used or activated such turning the pages of a written book placed on a lectern, shooting a target block with an arrow, or opening a trapped chest. Check out all of the Redstone Components here!

- ***Commands and Functions***
  Commands are advanced features activated by typing certain strings of text. These commands can be typed directly into the console or executed through a Command Block. These commands can perform many functions in the game, from changing the

time or weather to displaying text titles on the screen, to detecting a player’s or block’s position. Command Blocks require a Redstone signal to fire and can be set to fire once or repeat. You can chain together Command Blocks to run multiple commands in sequence or use one Command Block to run a function, which is a list of commands collected in an external text file. Commands are very powerful and are only available to players if cheats are activated or in Creative Mode. To learn more about Commands, check out this link!