Creative Building and Storytelling With Minecraft

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Abstract

The computer game Minecraft [1] takes place in a open, living world where every piece of the world can be changed by the players. This opens up a multitude of possibilities for creative activity, storytelling and learning, especially when players work together in the same world. This paper presents five different ways of using Minecraft as a tool for these type of activities, showing how open digital worlds can spark imagination and creativity in young minds, even for students with different kinds of learning styles.

Introduction

It is quite established by now that some computer games can be considered works of art [2] [3], even through most are not. But being able to *convey* creativity is one thing; can computer games *enable* creativity? Or in other words, can computer games be used as a creative platform, for creating meaningful creations or stories?

In this paper I argue that the computer game Minecraft can be used as such a creative platform, enabling creative activity, storytelling and learning. Children learn a lot from both creating things [4] and telling stories [5], and Minecraft can be used for both of these activities. While Minecraft is not as tangible as programmable dinosaurs [6] or Arduino-computers sown into clothes [7], it allows its players to fully immerse themselves into another world, which has a lot of implications for creativity.

About Minecraft

The world of Minecraft is mostly made out of thousands of cubes (also called blocks), each $1m^3$ in size. These cubes are made of different types of material like dirt, wood, stone, water, sand, iron, coal or gold. Not everything in the world is a cube, there are also objects like flowers, buttons and torches, and animals such as pigs, chicken, cows and wolves, but even these objects are composed of small blocks. This gives the world a certain retro style, which invites the players to not just use their eyes, but also their imagination.

Figure 1: Minecraft, a world of cubes

The world is a living, dynamic world: Trees, flowers and plants grow if they have access to water and enough light. Some days it rains or snows. Animals can be kept as domestic animals, as cows give milk, chicken lays eggs and sheep can be sheared to get wool. Fire can burn down forests and wooden structures, but not stone, dirt or other materials. Each day and night is 20 minutes long, and during the night you have to use torches to see where you are going.

The player can walk around and pick up cubes, place new cubes, or interact with certain types of objects, like pressing a button. Depending on the game mode you are playing, there are different focuses for the game:

Creative Mode is essentially a type of "god mode". The player has an infinite amount of every cube and object available to create whatever comes to mind without having to think of gathering materials, or food, or care about any dangers. The focus of this experience is simply to build something, without having any constraints, sort of like having an infinite amount of LEGO at your disposal.

Survival mode aims to create a somewhat realistic experience. The player starts out with nothing, and must harvest wood and stone to create tools, that can then be used to gather more materials, hunt for food or defend himself from the wilderness. Monsters spawn in the darkness, and it is important to create a shelter before the night comes. Most blocks are very slow to harvest without the correct tool, and tools wear out, forcing you to create more tools and better tools. The most important thing in this mode is creating something impressive with limited resources while staying alive.

In adventure mode, crafting is a huge part of the game. Tools can be crafted that help you do things quicker: axes chop trees faster, pickaxes mine stone and minerals quicker, and the shovel digs dirt quicker. Other types of objects can also be crafted, like doors, ladders, and buckets, and even conductive wires and motors that can open doors or push other cubes. In creative mode all of these things are simply available to you from the start, in an infinite number.

There is no actual goal in either game mode. The survival mode has a dragon that you can kill that is a sort of "boss", but few ever get there, as the game never really pushes you in that direction. Simply, the point of the game is exploration and creation, not getting to the end.

Minecraft Art and Remixing

There is a huge community around Minecraft, and as in Scratch [8], creators are encouraged to share their creations with others, both in videos and through opening the world for other players.

Figure 2: The Taj Mahal built in Minecraft

As with many other creative mediums, the real world, pop culture and history are great inspirations for Minecraft creators. The Taj Mahal [9], the Titanic [10] and the USS Enterprise from Star Trek [11] (see figure 2, 3 and 4) are only a few examples of the thousands of Minecraft works that are inspired by the real world or pop culture.

Figure 3: MS Titanic built in Minecraft

The graphics of the world itself can also be remixed: the visual look of the blocks can be changed by downloading texture packages that fans have made. There are thousands of different packages to choose from, to give you a better- or just different-looking world. This can be especially useful when recreating something from the real world that should have a spesific color or feature.

Figure 4: The USS Enterprise from Star Trek built in Minecraft

Directed vs Undirected Play

When players usually play Minecraft, there is no one telling them what to do. Being an open world with no inherent goal the player has to give him- or herself goals. This is the basis for all forms of creative behavior in Minecraft, and is one of the game's greatest strengths. However, Candy states that constraints actually can strengthen creativity [12]; is the world being made of cubes enough of a constraint? Can one achieve more creative uses of Minecraft by directing the play, or by letting the players roam undirected?

Undirected play is great for exploring the vast possibilities in Minecraft, and can result in some hugely creative works. However, it requires that the player is self-directing, giving him- or herself goals to complete. It can be argued though that *all* creative play in Minecraft is actually directed, as any creation requires imagination to design and dedication to finish. So it is only a matter of who the director is: the player, or the teacher? It might not really matter.

Execution

In this paper we will look at five teacher-directed exercises. They are directed because the students can at any point themselves play Minecraft undirected at home, and they probably will after having played it in the exercises. The exercises are not necessarily meant to be finished in a day, some of them can run over several days or weeks.

While it is not required that all the students are in the same room, or even the same building, during the exercises, it is recommended for coordination purposes that each exercise at least starts out with all the participants together in the same room. The teacher (or coordinator) has to set up a server for all the students to join, and from there coordinate the exercise as described in each section below. All exercises are meant to be played on the same server, with all players playing relatively close to each other, so one can see what the others are doing.

The licences for Minecraft have to be bought, but discounted classroom licences are available. [19]

Exercise I: Building With a Theme

Building is perhaps the most obvious form of creativity in Minecraft, and it is also one of the main gameplay elements of the game, both in creative mode and in survival.

It is important to note that the two different modes offer two completely different experiences of building: The creative mode gives you an unlimited supply of every cube and item, while you in survival mode have to harvest food and materials and build tools, while fending off monsters that come in the night. This means that building something large is much more impressive in survival mode than in creative mode, at least for public that knows the difference: To get the light blue diamond block in survival mode, you have to mine for hours, as diamonds are hard to find, while you in creative mode can simply place as many blocks of diamond as you like.

Some examples of themes could be:

- Roman architecture

- A future city

- The middle ages

- Your dream house

- Famous buildings

- Something from a movie

- Opposite-world

Depending on the theme, the players can work alone, in pairs, in teams, or all together. For instance you could make everyone make their own house from the middle ages quite close to each other, creating a middle age village. Or there could be one group working on a Roman village, while another group worked on a Germanic village nearby. Or everyone could work on making the Empire State building or the Eiffel Tower together.

Exercise II: Building With a Constraint

As discussed by Candy, constraints are a fundamental piece of creativity, both when it is internally or externally imposed. When you add a constraint to a creative project, new ways of thinking about the work can appear, making the process and result even greater.

Examples of possible constraints to give to students:

- You are only allowed to remove blocks, not place new ones, thus simulating how sculptors work

- You are only allowed to use a certain type of material

- You are only allowed to build up in the trees

- All the outer walls of buildings must be made of water

- All buildings must be upside-down

Exercise III: Storytelling in a Pre-built World

Storytelling is an art that kids do all the time: playing with their toys many kids will narrate what is happening, and act out an entire story. The same can be done in Minecraft, only even more elaborate: kids can build an entire world around the story before telling it, allowing for more complex and immersed storylines. Different players can play different roles in the story, either planned or improvised.

An example could be a story about a group of adventurers going out to kill the big bad dragon. The storyteller has already made a village where the group can find equipment and get directions, and the lair of the dragon, which is full of traps and lava. The storyteller then uses this world as a scene for his story, telling the story and participating in it at the same time, directing the group from the village, to the lair, and to the treasure.

While the building part of this exercise can be done by multiple children in teams, it seems most natural to only have one player being the main storyteller for each story. Of course there can be variations of this, having more players in minor roles, that take over the storytelling for a limited amount of time at certain places, someone could for instance play the role of the bartender the adventuring group meets in the tavern in the village.

Exercise IV: Making movies

Another form of storytelling is a recorded one. Movies made with computer games are so popular that they have their own word: machinima. [13] Creating movies this way can be seen as easy to learn but hard to master: as you do not need a camera, or any experience with a camera, all you need is some editing software, and you are set. But on the downside the game naturally puts in constraints that are not there when filming something in the real world, for instance when it comes to movement of the camera, and animation of characters.

There are huge amounts of Minecraft machinima [14], and for good reason: the easy learning curve, and the ability to make almost anything in the game makes it a well-suited platform for machinima. Popular Minecraft machinima include remixes of popular music videos [15] and action/horror movies. [16]

The exercise can be both open-ended or themed: Some students will find it easier if they are told to make a music video, than finding a theme of their own. It is very natural that the students work in teams of 3 or more in this exercise, as you need at least one cameraman and one actor for most types of movies, and many jobs that can be handed out to separate people.

Exercise V: Programming

There are special blocks in Minecraft that conduct or react to electricity in some way, called redstone. There are switched that turn electricity on or off, blocks that delay electricity, blocks that play an accord of music when they get electricity, or push other blocks when they get electricity. Using these blocks players can essentially create machines that do everything from opening doors and extending bridges to playing a classical piece of music.

The task given to the students in this exercise can either be very concrete ("build an elevator"), or very vague ("build something that uses redstone"). If the students have problems self-directing on this exercise, the teacher can give a theme or a certain component that the student should use.

This exercise is probably the most advanced one, as it features the most advanced part of Minecraft. With redstone you can even implement your own processor [17], but this is a task for higher education students.

Final Reflections

While the exercises have an inherent creative value by themselves, by being a fun way of creating something, there is also some collateral knowledge to be observed. In addition to being creative, working together with other players in a game like this will learn the students about cooperation and socializing within a group, how to work together towards a common goal, and how even small pieces of a large system can be important to make it all work.

It should be noted that Minecraft might not be for everyone. Even though the majority (64%) of Norwegian youth ages 9 to 12 play games every day [18], there are some who do not enjoy games, and never will. This holds true for most creative activities though, there quite a few people who will never enjoy painting, dancing or singing either. It is thus not a replacement for other creative activities, but a supplement, another tool to keep ready when called for.

Minecraft, especially the creative mode, has often been compared to building with an infinite amount of LEGOs. But there is one important difference: With LEGO, and a lot of other types of creative construction types of activities, you are a sort of god that lives outside the world of your creation. You do not live inside the same world as your creation, as you are way too big to be in the same world. In Minecraft however, the players are an actual part of the world. The players are not gods; they are, as we are in our world, incredibly small compared to the world around them. This makes for a much more immersive experience when creating inside that world, especially when it comes to playing together with other players. The players can gain a sense of community within the game that is probably not possible from only building LEGOs together.

Further work

The natural next step is to test these exercises on actual students, to see how the exercises work as facilitators for a creative processes. As mentioned by Bruckman [5] it might be hard to assess that learning has occured from this kind of work. But examples of evaluations that could give some kind of value could be observations made by a third party and questionnaires answered by the students.

Conclusion

This paper has presented Minecraft as a platform for creative building and storytelling. Five different exercises were presented, that could be used to facilitate creativity, learning and joy of creation. Using Minecraft as a tool, students do not only learn creativity, but also cooperation, socializing and a better understanding of complex or large systems.

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