

GAME DEVELOPMENT FOR A CAUSE

A guide for developing socially-conscious games

This guide was developed as part of a short collaboration between Technovation and Roblox. In 2020 and 2021 we worked together to help a group of Technovation Girls alumni develop their own Roblox games that educate or engage users in issues related to climate change. We were interested in exploring how to merge two interests: game development and solving complex social issues. The questions and examples in this guide provided a framework to support the girls while they designed and built their games. Although this guide was developed for a specific purpose that includes a focus on climate change-themed games, we thought it might be helpful for Technovation Girls teams (or anyone) interested in learning more about game development AND creating games that tackle big social issues.

The greatest advantage of games is that they are an interactive art form. Think about movies, books, paintings—oftentimes, you are a viewer who passively watches what the media presents. In video games, you become an active participant, interacting with the created world. Even if the path you must take is linear, going straight from point A to point B, it does not progress without your input. If you do not take action in the game, the game does not progress. This is the tenet that game designers should hold onto throughout development.

This document is meant as a starting point for Technovation Girls participants interested in developing games that address a complex problem. Our partnership with Roblox specifically focused on climate change, but many of the key principles in this guide can apply to other complex issues. We start with some basic guiding questions for game developers to work through when designing a game, and then dive into specific examples related to climate change and addressing complex problems through games.

Developer Checklist

Think about these guiding questions as you design your game. We'll walk through each question in greater detail, using the most famous video game, "Super Mario Bros" as an example to help provide some clarity, but also invite you think about how these ideas might apply to a game about a complex problem like climate change.

- What is the core concept of your game?
- What is the core mechanic of your game?
- What goal will you set for the player, both mechanically and narratively?
- What is the gameplay loop that keeps the player engaged?
- What feedback mechanism will you use to keep the player informed?
- How will you ramp up difficulty as the game progresses?
- How will you reward the player throughout the game?
- How will you address failure throughout the game?
- What will the visual aesthetics/theme of your game look like?
- What does the audial aesthetic/theme of the game sound like?
- What are some overall themes your game will encompass?

What is the core concept of your game?

What is the main idea of your game? In other words, what is the player trying to accomplish, or what does "winning" look like?

In "Super Mario Bros"... the core concept is to successfully navigate Mario to the end of each level.

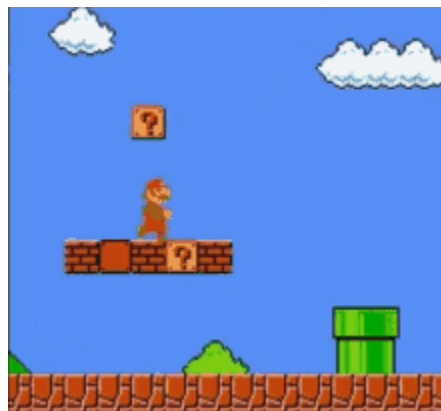


Nintendo

What is the core mechanic of your game?

What sort of movements can the user make in the world of the game? How will they interact with the world? Will they fly? Swim? Drive? The mechanic refers to the way players move around and get from place to place.

In "Super Mario Bros"... Mario can run and jump. This is the main way Mario interacts with the game world.



Nintendo

What goal will you set for the player, both mechanically and narratively?

What do you want the player to accomplish? How specifically will they accomplish it?
What challenges will they have to overcome?

In "Super Mario Bros"...

- Mechanically—Mario must reach the goal pole within a given time limit, while simultaneously avoiding (or defeating) enemies.
- Narratively—Mario is on a quest to defeat Bowser and rescue Princess Peach.



Nintendo

What is the gameplay loop that keeps the player engaged?

Games use "loops" to keep players engaged for the entire game. Although the mechanics of the game might be simple, the game should challenge players more with each level.

In "Super Mario Bros"... Mario must travel through a series of levels. Each one provides new challenges which tests the player in new ways. Mario still runs and jumps, but maybe he has to jump higher or switch from running to jumping more quickly than at the start of the game.



Nintendo

What feedback mechanism will you use to keep the player informed?

How will you let the player know when they make a mistake, or when they reach the end of the level? What clues can you give them through visuals, music, or gameplay that let them know when they've failed or succeeded?

In "Super Mario Bros"... touching an enemy with any part of Mario besides his feet will result in a death, causing the player to restart the level. Reaching the end of the level plays fanfare and allows the player to progress to the next level.

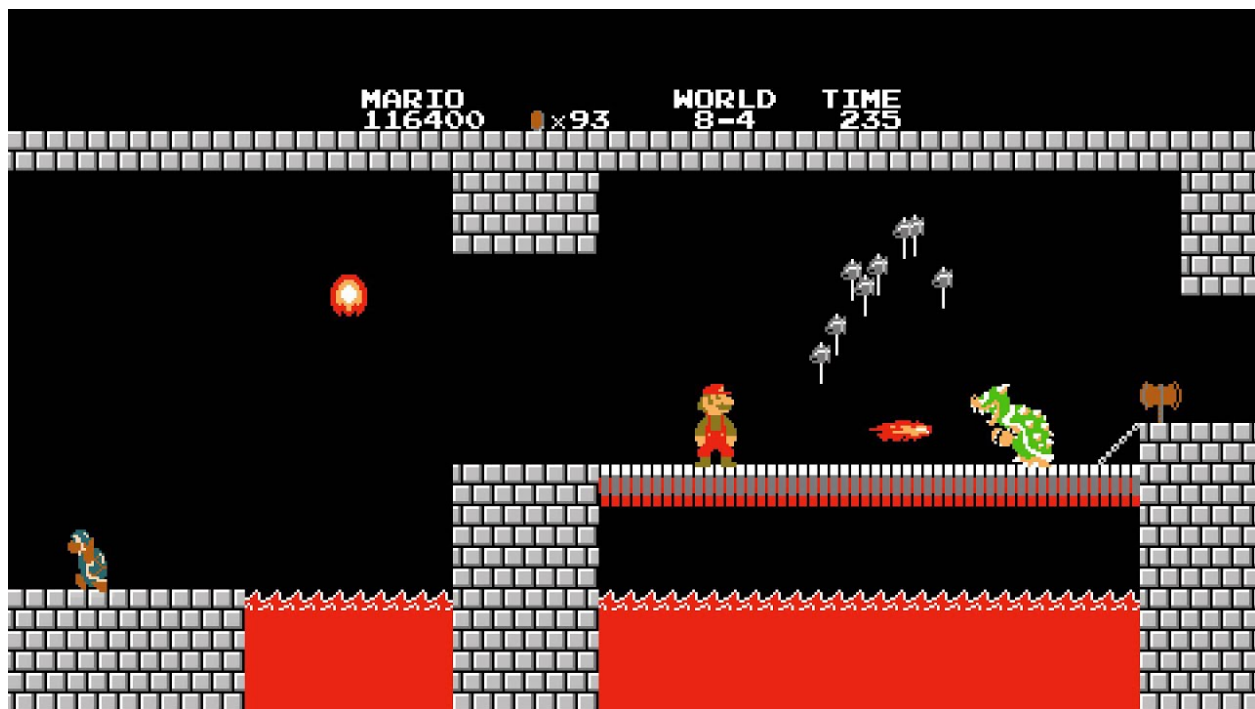


Nintendo

How will you ramp up difficulty as the game progresses?

What elements can you introduce or combine to make the game harder to play as the player progresses? Increasing difficulty can help keep players engaged in the game, and prevent them from getting bored.

In “Super Mario Bros”... as the player progresses through the game, levels introduce new challenges, either through more intricate level layouts (lava floors, spinning spike balls, auto scrolling levels, etc.) and/or more different enemy types (skeleton koopas that can’t die, hammer throwing enemies, jumping fish, etc.).



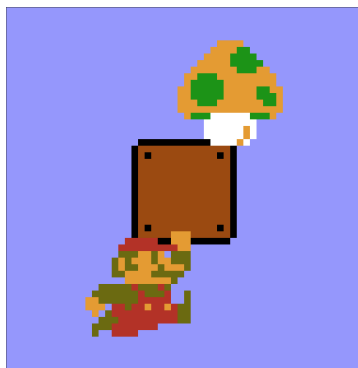
Nintendo

How will you reward the player throughout the game?

How will you let a player know they've succeeded? How will you motivate them to keep playing?

In "Super Mario Bros"... Reaching the end of the level plays a victorious fanfare and awards points, in addition to allowing the player to progress.

- Collecting 100 coins gives the player additional lives.
- Collecting power ups equips Mario with new and exciting abilities.



Nintendo

How will you address failure throughout the game?

Failure is a really important part of games (and life!). How will you decide what a failure is for each level or task, and how will you make sure players understand that they've failed? Will you give your players multiple chances?

In "Super Mario Bros"... Mario can only touch enemies with his feet, otherwise he loses a life.

- If Mario has a power up, Mario will lose his power up before losing his life, giving players additional chances for messing up.
- If Mario completely runs out of lives, the player can restart the game with a new set of lives.



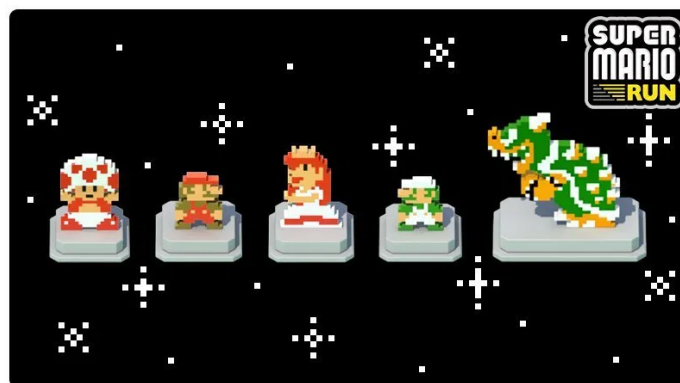
Nintendo

What will the visual aesthetics/theme of your game look like?

What do you want your game to look and feel like? How will you make the characters in your games eye-catching and fun to play as? Who is your audience for this game? What will be visually appealing to that audience? How will you make sure the world of your game looks and feels consistent from level to level while also having enough variety to be fun?

In “Super Mario Bros”... Mario is distinctly red and olive, unlike the rest of the game, allowing for his character to stick out and be more noticeable to the player.

- This game is meant for a wide audience, where anyone can play. As such, the world is designed to be cartoony and generally kind, to appeal to all.
- The game world takes place in Mushroom Kingdom, so many elements reflect that. A few of Mario’s power ups are mushroom themed (for example, the base Mushroom that makes Mario bigger and the 1up Mushroom that awards Mario with an extra life). Bowser is the large reptilian antagonist, and as such, many of his underlings are also reptile-like (for example, the variety of “Koopa’s”: Green, Red, Winged, Skeleton, etc.).



Nintendo

What does the audial aesthetic/theme of the game sound like?

What will your game sound like? Will there be music in the background? Is it fun, or is it scary? When will the music change? Are there additional sound effects that will play when a player completes a task or does a specific action?

In “Super Mario Bros”... there are a lot of different sounds that guide the players through the game and give them a clue about what kind of game they're playing and how well they're doing!

- The [general theme music](#) is fun and springy, to reflect the whole game's attitude of easy access. Levels also contain music that appropriately reflects the environment—for instance, the [underground theme](#).
- The game also contains audio feedback during critical moments. For example, a *boing* sound is played every time Mario [jumps](#). A high pitched chime sound is played whenever Mario [collects a coin](#). A rising rift is played whenever Mario [collects a power up](#).

What are some overall themes your game will encompass?

Does your game have a bigger message? What do you want players to feel and learn as they play the game? Does the game encourage persistence? Creative thinking? Adaptability?

Super Mario Bros... is made to be accessible, with simple, yet engaging gameplay. The player should not feel that it is the fault of the game that they're not succeeding, but rather, all the tools are available to the player and victory can always be achieved.

Examples of Games that deal with Climate Change

About the focus on climate change

For this alumni program, we asked teams to develop apps that address climate change because climate change is such an enormous issue and so many young people are invested in addressing it! We also thought that it might be a really interesting challenge to ask alumni to think about how to teach people about climate change, or translate climate change and its effects into a game. One of the larger questions we wanted them to think about was how can we use games to engage people in problems that can sometimes feel impossibly large or complicated?

It can help to see what other people have done when you're brainstorming your own idea...but it's hard to find a game that both succeeds in discussing climate change and in being an engaging video game. There are games that play more like a movie with in-depth narrative mechanics, but because players' actions aren't as essential to moving that story forward, these games aren't taking full advantage of the video game medium. And there are games where the focus on a bigger problem gets lost to the in-game mechanics and rewards. But there *are* a few games who come close to marrying these two big pieces! Although their main purpose may not be to educate people about climate change and change their real-life behavior, they often make players reflect on the topic.

Frostpunk

**This game deals with mature themes that may not be suitable for a younger audience.*



11 Bit Studios

[Trailer](#)

[Gameplay Trailer](#)

Synopsis

In a twist, climate change has caused the world to be enveloped in a deadly cold instead of droughts and rising temperatures. You are the leader of the last city on Earth, and it is your responsibility to manage its citizens and infrastructure.

Gameplay

Frostpunk falls into two genres:

- Survival—the player is tasked with meeting certain objectives in order to survive to the next day, incrementally creating the tools and gathering resources needed to meet the task
- City Builder—the player is the builder of a city, managing its growth and citizens. This is a sub-genre of simulation games, where the player has a lot of options of control and management

In this post-apocalyptic world, resources are scarce and its last people are constantly on edge, in danger of the cold and themselves. The player is tasked with building up the last city where its residents must make a new start for humankind. You will construct buildings, make difficult societal decisions, and balance survival with your own morality.

Reflection

While Frostpunk has a good foundation of mechanics, its greatest strength is how it challenges the player to make choices. Knowing that it was the action of humans that caused this situation, knowing that you often had little choice but to do terrible things for survival, it constantly puts you, the player, on edge with the decisions you must make. This game immediately jumped to mind when thinking about climate change in games because it's such a strong (if extreme) example of how humans destroy the world we inhabit and how we'll have to deal with the consequences of our hubris. This game has a bleak, but real emotional impact on its players.



11 Bit Studios

Bee Simulator



Varsav Game Studios

[Trailer](#)

[Gameplay](#)

Synopsis

This game has you play as a bee, doing bee things like gathering pollen and dancing. You play as Buddy, who's embarking on her journey as a worker bee.

Gameplay

This is a simulation game in an open world, where you can explore the world at your leisure. There's a light narrative story for the player to follow, but ultimately, the world is your sandbox to interact with. As you fly around the world, you will complete tasks as suited to your bee persona and unlock a multitude of facts related to the bee world.

Reflection

This game is a pretty stark contrast to Frostpunk; it's light hearted, charming, and even a bit inspirational throughout. It's big selling point is the telling of a story from a different perspective, creating empathy for bees. This game is a prime example of learning without the tedium of learning. Players become motivated to aid their bee

character and to discover more about their world. This game's title follows a trend of popular "X Simulator" games, with the most famous one being Goat Simulator. However, where Goat Simulator was a huge joke with silliness, Bee Simulator takes advantage of the platform to also deliver a strong, educational message.



Varsav Game Studios

Civilization VI: Gathering Storm



2K Games

[Trailer](#)

[Gameplay](#)

Synopsis

This is an expansion to the base game of Civilization VI, which is a turn based, strategy game. It adds on new content, where climate change and natural disasters become a key mechanic that players need to interact with.

Gameplay

You are a ruler of a civilization, leading them through the ages (from the stone age to the future), with the goal of establishing your people as the leading civilization of the world. It's reminiscent of a board game, only much more complex given the freedom of a virtual space. Gathering Storm is an add-on to the base game, where your actions have an impact on climate change and thus the world at large.

Reflection

Civilization is the biggest game franchise on this list. It's also worth noting that among the games here, the importance of climate change to the game is the least

significant in Civ, but still poignant nonetheless. All this is to say, that these developers prioritized their core game first instead of forcefully adding in a topic and the messaging still gets across.



2K Games