GAMES PRODUCTION & DEVELOPMENT

Activity 2: *Resource Management in Video Games*

University students, B.A. and M.A. levels

Intermediate

80 minutes

Up to 20 participants

Familiarity with basics of game design; ability to synthesize, understand and apply acquired knowledge

Data projector, pencils and paper

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CONTEXT

Video games are made by people and so they process, explicitly or implicitly, many themes and concepts we encounter in our world. Game narratives and rules often convey messages linked to climate-related challenges. It is crucial that we learn how to analyze and work with these messages as well as experiment with different patterns in game design. Only then can we create powerful games that can confront us with climate crisis.

SUMMARY

The aim of this activity is twofold: first, to increase students´ game literacy in reading video games through the lens of various environmental topics, and second, to let students practice how game design can be used to represent environmentally relevant topics in their games. In the first part of this activity, the lecturer, using the provided notes and presentation, introduces selected relevant areas related to climate change. In the second part, the lecturer selects one case study for more detailed analysis. The aim is to spark inspiration among students and encourage them to represent a nature-related topic using a video game. Then, students in groups will come up with a game concept and present it to the rest of the class. Through this hands-on experience, students will practice developing game concepts inspired by real-world climate related topics in a meaningful way.

TASK

As part of this task, you will increase your game literacy regarding environmental topics in video games. Using the newly acquired knowledge, you will modify one of the existing games in groups and present it to the class.

PREPARATION

You will need a data projector, pencils, and paper for each group, as well as a room suitable for group work.

LEARNING OUTCOMES

- An introductory insight into how to use game design to raise awareness about environmental topics
- Increased game literacy in reading video games through the lens of various environmental topics
- Practice designing games with social impact

Step 1 *Mapping of existing options (15 minutes)*

This activity is accompanied by the powerpoint presentation (Greening Games Design Workshop). We are using subheaders indicating the relevant slide for each instruction for each step of this activity described in the following lines.

Slide 1

Today we are going to have a case exercise on how simple decisions in game design can affect the feel of our game and thus lead us to think about the often complex themes depicted in the games we develop. In this case study we will specifically focus on climate and sustainability.

Slide 2

First, what can games do for the climate? Well, quite a few things, actually. This handy chart shows the main four categories, which are the technical side, gameplay, story and aesthetics. But to simplify it we have two major approaches. One is maximizing the games cultural influence by using some or all parts of the game that are interacted with by the player - so the gameplay, story or aesthetics. And then on the other hand we can minimize our actual carbon influence by focusing on the technical side. But today we want to focus specifically on game design and more specifically gameplay design.

Slide 3

That's where transformational games come into play. Transformational Games are those that are developed with the intention of changing players in a specific way that transfers and persists beyond the game.
This is a bit general and can be applied to a myriad of topics, especially by focusing on behavioral change and helping players learn.

Slide 4

So to move back, we have four key factors that encourage change in players.
To be able to do something, players first need to know what the issue is, why it is a problem and what caused it. And most importantly how they can realistically deal with it.
Next, their attitude towards the issue at hand and the natural world needs to be positive, they need to find the balance between protecting nature and using resources responsibly. They need to learn how they are influenced by the natural world and how they influence it themselves. If players feel empathy for animals, settings or other people affected they are more likely to become invested in their environment.

Perceived self-efficacy is the player's belief in their own ability to effectively act to create change. Knowing the solution and caring isn't enough to create willingness to act. We can build experiences that help the player overcome challenges in a safe environment.
And last, but not least, hope. We need to give our players social trust in other people who are contributing to the cause and show them clear environmental goals that are achievable.
Always keep in mind your audience however, what kind of knowledge and attitude they may already have. It's very easy to go overboard and elicit a negative reaction.

Slide 5

Now that we know how, the question is what should we focus on? A great source of inspiration are all the different climate impacts. Now what exactly is climate impact? It's the downstream effect of climate change.
First we have heat waves, these come in several versions like forest fires, heat islands in cities, where part of the city has a higher temperature than other parts. Poor construction practices can lead to both higher heat in the city and poor conditions of the workers.
Flooding is becoming an increasing issue compared to the beginning of the 20th century and the same goes for drought. Agriculture both contributes to this problem and suffers greatly from it - the planet gets hotter, plants lose more water, plants need more water - we get water shortage and crops are affected.
Extreme weather events are things like storms, hurricanes and wildfires. These are becoming more common and more destructive.
As mentioned, crops and therefore livestock are all affected. Either destroyed in extreme weather events or becoming less productive. Fisheries also aren't exempt from this as they suffer both from climate change and overfishing by humans.
The ocean is getting all sorts of new features like rising levels because the warmer water expands and ice melts, pollution like microplastic and carbon dioxide which make it more acidic and plenty of hurricanes. Island nations like Japan also need to watch out for floods and tsunamis as those are more dangerous than ever.
Some species of animals will be able to relocate and survive, adapt, but others won't, invasive species can also spread more easily now (lionfish for example).
And together with that we have migration and displacement of people, who lost their water and land. with problems like human trafficking and exploitation of migrant workers.
I've tried to go through them somewhat quickly, but really any of these issues hide even more complexities. Good way of tackling them in games is to teach prevention and what causes these problems, raise awareness about the more unknown issues, and show people how to deal with these new dangerous situations. Solutions are also good themes to tackle in games.

Step 2 *Task introduction (up to 5 minutes)*

Any of the listed themes are a great starting point, so feel free to change them and modify/come up with your own version of this workshop.

Slide 6

So as you can see, there are truly plenty of topics to choose from when you want to design a game around an environmental theme. But today we are going to focus on just one part of a game, instead of creating a whole game around it.
And that's where resource depletion comes in. This topic is in some way present in most of the aforementioned climate impacts and is either their cause or consequence. But while resource depletion is a worldwide issue, a lot of games run into the unfortunate habit of making some of their natural resources infinite. And while this can definitely be argued as part of simplifying the game design and getting rid of unnecessary realism, it's somewhat misleading and not very creative to just leave any convenient resource as infinite. That's why we chose this as a case for more enviro-friendly games and an exercise in game design.
Of course there are plenty of games that don't have this shortcoming and either handle resource depletion in the background by having them replenish over time or even actively involve the player in the replenishment. Good example of this is Stardew Valley, where a new tree can only regrow next to an existing one. However, the player can also purchase new saplings.

Slide 7

Today, we are going to be focusing on those bad apples that either completely ignore this issue or just straight-up introduce infinite resources.
First, let us have a look at Animal Crossing and its conveniently infinite fish population. While arguably you won't be able to overfish an ocean as one measly villager, the island's lakes are quite a different story. Even Animal Crossing however at least tries with its trees, unlike a more typical example like Ark: Survival Evolved, where everything just magically respawns after a certain time, even if you raze the whole map to the ground, be it trees, animals, or even rocks.
A more jarring example would be the Monster Hunter series. The game's stories are usually focused on helping the ecosystem of the world by culling hunter animal numbers or eliminating some bigger threat. This gives a rather big case of ludonarrative dissonance, however, as you endlessly grind and murder hundreds of monsters to craft gear from them or finish some mission. And all of these monsters are just always conveniently back.
Finally we have a bit of a different example, which is Age of Empires. Here the resource in question is trees. You need them both for building and to clean up space for everything you will need to conquer the map. And while this is not the case of an infinite resource, because the trees never regrow, it still falls short in that you can flatten the entire map, conquer every city and then somehow… get a win? With a nation that now has exactly zero flora.

Step 3 *Game concept development (up to 45 minutes)*

Slide 8

Now that you have seen some examples and hopefully been reminded of some games you have played yourself, here is what you will be doing today.

First, please make groups of four. Together, make a list of games that you have played or are familiar with that are using a mechanic relying on at least one unlimited resource. Then, choose one of these games that you would like to conceptually modify in this regard. In other words, you have to then make this unlimited resource limited and give players tools to be able to deal with it. Or if it's already limited but not addressed in any way, then address it and give it consequences. What can the player do to handle the situation? Do not just create an upgrade which will unlock unlimited resources, please.

Think mainly gameplay-wise, but you can add a narrative explanation too, if you like. And most importantly, make it fun. Realism can help the message but don't overdo it. If it's too meticulous and boring nobody is going to play it anyway.

You have 40 minutes for the task. After that, each group will have 3 minutes to present their solutions and answers to other groups (see Step 4 below)

Depending on the customs in your educational institution, it might be appropriate to allow students to have a break in the middle of this activity within Step 3.

Step 4 *Presentations (up to 15 minutes)*

Slide 9

After a break, each group will briefly present their solutions and answers. We and the class, hopefully, will give feedback. Each team will have about 3 minutes to present their idea. In this time you have to present the game you chose, the resource and what it does in the game and your solution for making it limited or addressing its depletion. You should also try to answer these questions:

- How does your design solution affect the entire game?
- Does your design solution change what the game says about ecology?
- Does your design solution change the existing message of the game?

Sources

[1] Culyba, Sabrina (2018). *The Transformational Framework: A Process Tool for the Development of Transformational Games.* Carnegie Mellon University. Journal contribution. https://www.transformationalframework.com

[2] Grant Shonkwiler, Chance Glasco, Trevin York, Arnaud Fayolle, Paula Angela Escuadra (2022). *Use Your Game Developer Superpowers to Fight the Climate Crisis Workshop*. Presentation. https://www.gdcvault.com/play/1027696/Use-Your-Game-Developer-Superpowers

[3] Whittle, C., York, T., Escuadra, P.A., Shonkwiler, G., Bille, H., Fayolle, A., McGregor, B., Hayes, S., Knight, F., Wills, A., Chang, A., & Fernández Galeote, D. (2022). *The Environmental Game Design Playbook (Presented by the IGDA Climate Special Interest Group)*. International Game Developers Association. https://igda-website.s3.us-east-2.amazonaws.com/wp-content/uploads/2022/04/06100719/EnvironmentalGameDesignPlaybook_Alpha_Release_Adj.pdf

[4] Coffee Stain Studios. (2020). *Satisfactory*. Coffee Stain Publishing, steam page. https://store.steampowered.com/app/526870/Satisfactory/

Credits & Acknowledgements

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