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Serious Games report

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# Literature Review

Games for the purpose of education is not a novel concept. The application of educational serious games can be seen within a variety of different sectors for example in medicine (Tsopra et al. 2020; Hannig et al. 2012), aviation (Chittaro, Buttussi 2015), and even linguistics (Alyaz et al. 2017). Sustainability is no exception to this as can be seen in games like Imagine Earth (Serious Brothers 2022) and Crabby’s Reef (SeriousGeoGames Lab 2022).

What does using serious games for sustainability achieve?

How does it achieve this?

Moreover, it is imperative to consider UNESCO’s guidelines on Education for Sustainability Development which outlines several different competencies that could be potentially covered. To ensure that the users come away from the game with a base understanding of the issues surrounding the battle between climate change and the chalk stream biodiversity, the game needs to ensure that it facilitates the critical thinking, anticipatory and self-awareness competencies. By developing a sense of self awareness within the game, the player will slowly begin to understand the ways in which their actions can impact the surrounding world. This understanding can then translate outside

To best represent the existing knowledge and concerns surrounding **[ ]** and climate change’s influence on it via a game, a literature review of the relevant published works in the topic area is necessary. Through developing a deeper understanding of the subject area, it will enable the design and implementation phase to better capture the client’s requirements in relation to the chosen topic.

## User Analysis

## Task Analysis

## Environment Analysis

# Design Matrix

|  |  |  |  |
| --- | --- | --- | --- |
| **Source** | **Observations** | **Requirement** | **Ideas** |
| User Analysis | | | |
| Client notes based on Green Academy’s briefing | Players are university students | Game should present information in a unique way so that those who are either new to the material or quite knowledgeable on it are able to enjoy the gameplay experience | The game will incorporate a visual novel style of storytelling that involves the player in the narrative’s events |
| Players might not be experienced ‘gamers’ | Game must include a tutorial | The game will include a brief trial level that walks the player through key mechanics |
| Players might be uninterested in a sustainability centred game | The game must convey information in a method that captures a player’s sense of intrigue and is memorable | The game is set in a high fantasy allegorical scenario to drive interest in the subject material |
| Task Analysis | | | |
| Client notes based on Green Academy’s briefing | Encourage critical discussion and exploration of learning | The game must help players facilitate one or more of the UNESCO ESD Competencies | The game will develop a player’s self-awareness, critical thinking, and problem-solving competencies through its ‘questing’ mechanic |
| Promote a wider understanding of sustainability in relation to existing | The game should reference the UN Sustainable Development Goals (SDGs) | Player interaction with characters will include discussions on the ‘life below water’, ‘responsible consumption’, and ‘climate action’ SDGs |
| Designed with a clearly defined ending | The game should be designed for short-term development and include a definitive ending instead of being an open-ended simulation | The game will end once the player fails to complete all their quests within the allocated time limit. The game will also point out that the reduced time limit is a result of climate change’s influence on the biodiversity |
| Offers critical perspectives on the topic area | The game must involve discussion on climate change’s influence on the biodiversity in chalk streams | The game’s questing mechanic will include tasks based on combating the influence of climate change within the chalk stream fantasy village. It will also include NPC’s (the wildlife) commentary on the negative impact climate change has on their lives |
| Environment Analysis | | | |
| Client notes based on Green Academy’s briefing | Limited time allocated for gameplay | The gameplay time should run for a maximum of 10 – 15 minutes | The game’s core functionality is the initial introduction of the story, each time the seasons loop back the timeframe to complete tasks is reduced significantly |
| The game will be played on a variety of devices | The game must be easily accessible | The game will be browser based so that it can run on any device |
|  |  |  |
|  |  |  |
|  |  |  |
| Parallel Products | | | |
| Products that address a similar topic or are included within the sustainability and climate change area | Sustainability Games – it’s a quiz-based system that teaches players about the SDGs with a quantifiable outcome after each quiz round | The game must include a scoring system that allows users to compare and discuss their performance post-game | The game will include a timer to denote how fast quests were completed in each run of the game’s levels. In addition to this it'll also include a display at the end that highlights how many levels a player lasted for. |
| Crabby’s Reef – Classic arcade style game that explores the impact of ocean acidification on marine wildlife. |  |  |
|  |  |  |
|  |  |  |
| Design Guidelines | | | |
|  | Users may be colourblind |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

# Design Document

## Title of the Game

Winterbourne Babysitter

## Game Overview

## Core Objectives

## Gameplay Theme

## Game Structure

## Distinctive Features

## Game Features

## Reward and Scoring Mechanism

## Control Mechanism

Winterbourne Babysitter is controlled via a ‘point and click’ navigation and interaction system using a mouse.

## Interface Mechanism

# Storyboard

# References

Alyaz, Y., Spaniel-Weise, D., Gursoy, E., 2017. A Study on Using Serious Games in Teaching German as a Foreign Language. *Journal of Education and Learning*, 6(3), pp.250–264. 10.5539/jel.v6n3p250.

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Tsopra, R. et al., 2020. AntibioGame®: A serious game for teaching medical students about antibiotic use. *International Journal of Medical Informatics*, 136. 10.1016/J.IJMEDINF.2020.104074.