**Factory Tycoon**

**Introduction**

The factory tycoon project tackles issues that are relevant and faced in today’s society. With the need to make younger audiences aware about the impact they have having and to try and encourage the audience to be aware of the impact they are having on the environment as well as steps that they can take to help reduce the effect they have on the environment. The game is aimed at a young teen audience e.g 13+. The game aims to show the process a packaging company, along with the choices it has to make to keep a sustainable business by meeting the three pillars: social, environmental and economical.

**Base research**

**Similar games**

After researching similar games to the style of the specifications there are 3 possibilities of the direction. A turn based game where the player can interact with the game by selecting the possible choices e.g. deciding where product disposal will be sent to. A similar game to this style is Democracy 3 (Positech, 2019). However this style has very little interaction other than selecting the decisions to be made.

Another turn-based style is where the turns are split into ‘days’ where player can interact with the game can interact with the game e.g. buying more equipment and placing it down. Then at the end of a day the player can see the effect they have had towards the Economic, Social and environmental pillars. This can then allow the player day by day to adjust their play style. A game similar to this style is Stardew valley (Chucklefish, 2019) where the player can produce actions and interact with the world during the day, but at the end of the day it shows the review of the player’s actions e.g. levelling up, things they’ve sold.

Research also directed towards a website with a variety of games targeted towards sustainability (Games4Sustainability, 2019). The two games that stood out with similar management and effect style The McDonalds video game(Games4Sustainability, 2019) and Urban climate architect (Games4Sustainability, 2019). These both focus on development and how they can affect the environment with the McDonald’s also focusing on the need to meet supply and demand which is needed to help keep a business running.

**Background**

Researching into the three pillars lead to the 17 sustainable development goals (United Nations, 2019) which have been developed by the United nations these could be incorporated slightly into the game but with the focus of the game still on the three pillars.

A nice guide for businesses on the three pillars from Investopedia(Beattie, 2019) outlines the main objective each pillar has alongside items to think about when developing a business.

**Deliverables**

A turn-based game which allows the player to interact with a factory floors, place machines, upgrade machines alongside time being invested in developing a range of different sustainable techniques e.g. product that is bio-degradable. Which can be done by using certain raw materials as well as having a sustainable disposal method.

The players will be able to see how well/ not well they are doing based on the money produced as well as the balancing of the three pillars, if one of the three pillars if negative for too long then the game will result in a lose state.

The client will receive an exe of the game to run on pc as well as an APK which will allow the client to run the app on android devices, as a combination of which they use to run the game and allow users to play at festivals.

**Main Game Concept**

The player controls a factory which produces packaging for products. The factory will be comprised of three different sections that the player has control over, raw materials, production materials and product disposal. The player can decide to upgrade the packaging such as using a different raw material to base the packaging on or changing the way that the packaging is made. This can have an impact on the way the company is seen from a social, environmental and economic point of view. The player’s aim is to try and create a balance of all the pillars, while making the company profitable.

There are two main section of the factory, the factory floor and storage. The factory floor is used to place machines, there is limited space, so the player needs to be very selective of the machines that they place down. The storage is used to hold the raw materials and the waste that is produced from the product disposal.

**Raw Materials** – A variety of materials which the player can choose from and place down into storage to be used by the production process.

**Production Materials** – A variety of machines that can be placed down in the factory area. The machines consume the raw materials, if more than one machine is placed down the raw materials are shared equally between the machines

**Product Disposal** – A variety of machines can be placed down in the factory area. The machines produce disposal from the products produced. The disposal can either be waste or raw materials, this will go into the storage. The waste can be sold out of the storage for a high price otherwise it will sit in the storage, if the storage fills up past a certain percentage the player will fail.

The player each turn will be able to build/ buy a selection of items from raw materials as well as machines/upgrades from production materials and product disposal. The machines that are brought and placed will affect the social, economic and environmental values as well as the profit produced.

Every 5 turns a question will be asked to the player. This is to see how much they have learnt from the game. The responses will be recorded using the analytics and the user will also be told which one was the correct response.

**Early Game**

The player will start with a small amount of money, enough to afford to make cheap packaging which the stakeholders have put into the company. The players will be guided through how to choose and upgrade the three areas by tutorialisation, explaining the social, environmental and economic effects that the players choices will make.

**Core loop**

The main mechanics for a turn:

* Use money to choose upgrades/raw materials
* Upgrades shown in factory, few seconds animation
* Raw materials consumed, disposal waste/recycling produced
* Stats shown from total

**Fail state**

The player will be able to fail the game in a couple of ways

1. Any of the stats are too low for too long e.g. economical doesn’t improve at all in 5 turns.
2. The storage fills up with disposal waste which can’t be recycled into the raw materials

**Analytics**

Every 5 turns a question will be asked, giving the user 3 options. These can then be used as analytics to see how much the user has learnt from the playing the game. E.g. how many player got the answer right etc. These can then be used to help produce statistics about the player’s lifestyle e.g. they don’t know plastic doesn’t biodegrade. This can then be used in future research and help to raise awareness of certain issues.   
   
Analytics can also be used to measure which machines, upgrades and materials the player uses. E.g. if they do just stick with the cheap easy machines or if they try to purchase the more costly or more eco-friendly machines.

**Stretch goals**

Implement a difficulty-based system:

•***“Easy”***: Hard to lose public approval + longer game lengths + lower volumes of waste to handle

•***“Medium”***: Environmental impacts build quicker  + lower efficiencies from renewable tech

•***“Hard”***: short game lengths + quickly lose approval if continue with non environmental methods

•***“Recession”***: High approval from low environmental impact but public won’t spend money

•***“Thrifty”***: Start with  lots of renewable raw materials but no production facilities

**Testing**

Before rolling the game out on a large scale with music/science festivals and school smaller test groups could be used to see if the game meets the goals of raising awareness of the three pillars as well as providing an engaging game for the players. As well as testing features as they are implemented to make sure that they will work as they should.

**Theme**   
**The main colour of the theme is a light green, which as well as being a thought of environmental colour it is also the colour of the hoodies worn by the Bath university students when they show off projects like these at festivals. The other colours are colours that will look**complimentary with the first light green.

**Timeline**

**Prototype – 1st Feb**

The prototype will meet the following criteria:

* A rough playable turn
* Placing machines will affect the social, economic and environment values
* Sprites will be placeholder
* Design will be rough, can be changed after meetings with client for e.g. positions of data, colour etc.

**Alpha – 1st March**   
**The**Alpha will meet the following criteria:

* Fail state added
* Adding in analytics
* High scores- saving locally and cloud possibility
* Begin balancing social, economic and environmental values of items/machines/upgrades and profit/cost
* Add ability to delete machines
* Add timer to turns

**Beta - 1st April**

The Beta will meet the following criteria:

* Complete balancing of social, economic and environmental values and profit/cost
* Possibly add in stretch goals

**RC – up to hand in deadline**

* All information client is providing e.g. item/upgrade name, Questions and answers text
* Final polish and adjustment to make sure client is happy

**References**

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