CTouch Research & Concept

Research Document - CTouch - GD7

Brainstorming

- Competitive
    - Free for all
    - Classroom vs classroom/year vs year/school vs school (random, invite code, etc.).
    - Get tokens for saving energy.
    - Spend tokens to upgrade yourself or downgrade the competition.
    - Daily/weekly/bi-weekly battles.
    - Have breaks between battles to increase demand for kids to want to play.
    - Reward good and competitive behaviour by calling out performances in different categories (e.g. Class 1A helped out other classes the most. Class 4B saved the most energy) per week/monthly basis.

- Collaboration
    - All classrooms/year/schools work together to defeat an AI (AI vs AI).
    - Get tokens for saving energy.
    - Spend tokens to upgrade others. Cannot upgrade themselves.
    - Daily/weekly/bi-weekly battles.
    - Have breaks between battles to increase demand for kids to want to play.

- Hybrid
    - Year vs year / school vs school
    - Together vs enemy
    - Reward good and competitive behaviour by calling out performances in different categories (e.g. Class 1A helped out other classes the most. Class 4B saved the most energy) per week/monthly basis.

Aquarium

Extend the existing aquarium prototype.
Negative reinforcement though, kinda meh.
Who cares about fish?
Shark is right, fish are tasty!

Racing game

Every classroom has a race car.
Each race car goes faster (can use more energy) when the display is using less power.
The classroom competes against each other in order to see which class was the most energy efficient.
Race can take place over a longer or shorter period depending on power statistics.
Positive reinforcement, great plus

Virtual pet

The pet increases in needs as the display is on (hunger, thirst, pets, cleaning)
The longer it's on, the shorter its lifespan will be.
Negative reinforcement though, kinda meh.
Kind of screen saver like

In need of sleep

I'm tired, let me sleep. I've been working for so long

Pet races

Let the pet rest as much as possible. At the end of the week, do a race with the other classrooms to determine who took care of the pet best. Important to not know how much energy has been gotten exactly.

Different background than the Aquarium

Why an aquarium? Why not the green hills and mountains or any other background you can think of? Ideas below. This will make choices one can take and be happy with its decision and changes from time to time. This gives the viewer a great look at what happens to environments if you become slacky and too much energy reliant.

- **City**. the atmosphere, pollution, trash, sound effects changes and also the happiness of the city. (maybe more)
- **Green hills and mountains.** Trees, mountains, nature (waterfall), all can change and become polluted. Animals die and vanish, smog and ugly background remains (desolation)
- **Farm.** Crops and animals will die. Air -, land - and soil pollution will form. Healthy harvested crops and happy animals will give player points. Kippen.
- maybe more? (don't know one now)

We can make it possible to check out other screensavers from your friends to find out who is taking better care of their environments with nice cosmetic rewards, color difference, medals, skins, sound effects etc.

Platform adventure game

The character gets the amount of energy you save each day to move and the story is driven to engulf the player into the world of savings and making the world a better place. Players will know the importance of savings and things that can happen or to stop it before happening. This way the player realizes the importance and the mission to start thinking and doing things differently for the greater good.

Landscape with animals

The same sort of idea as the aquarium however there is a correlation between the energy savings and the landscape. While energy is being saved, animals come to your landscape to roam. When energy savings are bad, bad things will happen. Bad things could be deforestation, hunters, roads, etc. The basic mechanics of the aquarium can be reused for this project. The shop could contain special animals you can buy with coins (just like in the aquarium game). Some special animals only appear when certain milestones are reached.

Battleships

Classes get to compete either against each other or an environmental hazard (The Kraken). Using the screen in an energy-aware way gains the class tokens to use in battle. Scores are measured by performance in the competition, but also by helping classes and being energy efficient. At the end of a week, scores are compared and classes are rewarded for special performances (a special reward for being the most energy efficient/helpful/effective).

Stimulating energy saving by using a game/app

The use of games to stimulate saving energy has not been researched a lot. There have however been a few experiments to see how different feedback would affect energy saving in households and why people would save energy.

Study 1: Different feedback experiment

A first study looked at how much energy people would save when given an app that provides them with feedback on how they used up the energy. It was done in two different ways. one group of people were given an app that gave real time feedback about their energy consumption. A second group was given the same app, but it only provided them with feedback at the end of every week. As a result, the group that got real time feedback reduced energy use by 55% and the group that only received weekly updates by about 30%.

The incentive to participate was provided in the form of an ice cream party for the winning dormitories. Hardly anyone attended this party. This suggests that **the motivation to participate was based on the competition, rather than the final prize.** This however, would likely not be the case for children. It could however **motivate teachers to do better than their colleges.**

According to these statistics, we shouldn't make our feedback intervals too big as it would likely result in confusion in what caused the energy consumption. Schools would probably not play the game for longer than a few minutes a day, which would make **one day intervals between feedback a perfect middle ground.**

Study 2: Power Agent. Testing reaction on web based feedback

A second study was focussing on energy and water saving and how they would visualize it to people so they would know how to improve their consumptions. They tested whether or not these visualisations helped. With this study, they found social motivation to be a key component in actually saving a lot of energy/water. They suggested that to motivate energy saving behaviour, social motivation should take first priority along with the provision of concrete suggestions on how to save energy.

They created a role system in which each teenager has its own special role and teenagers from multiple households would form a team like this. They would have to fulfil a mission once a week that is unlocked via a game on their cell phone. Sometimes this would require family members to participate indirectly in the mission. **The social interaction in the form of peer pressure from the team members and the cooperation of family members were reported to be very motivating.**

For children this effect is often even more relevant. They would have to encourage each other and the teacher for our game to work properly. When this is not happening, we'll lose the attention of the children more and more which will result in people not using the game anymore in time.

Study 3: Power Exchange. Testing for longer lasting effects

In previous studies, a lot of energy was saved, but what they both had in common was that the energy consumption was not monitored after the experiments ended. This however, is really important in long term energy saving. In the Power Exchange experiment, players would get less feedback than in the Power Agent experiment. The only way they could get insight was by “playing duels”. It was played for 1 week and after that, the players were monitored for 10 more weeks.

On average, the consumption in this 10 week period was 14% lower. The researchers concluded that the Power Explorer trial showed indications for a long term effect on energy consumption, a significantly positive attitude change towards energy savings, the forming of energy saving strategies in the form of new habits and less extreme energy saving energy measures compared to the trial with Power Agent.

This suggests that **insights of power consumption in our game should be subtle and children would have to slowly progress in their knowledge in energy saving instead of major changes right from the start.** This helps the children (and also teacher) to keep up the energy saving even after finishing the game.

Source:
Exploring the use of a game/app to stimulate energy saving in households page 106-108.
https://energybattle.nl/wp-content/uploads/2019/07/Exploring-the-use-of-a-game-to-stimulate-energy-saving-in-households-Daphne.pdf

Reference Games

Here is a list of a few games/apps that have a similar goal in mind. By having a look at these, we will have a better understanding of how they encourage the player to work towards the goal of this game/app.

A lot of the games we've come across are games which have education as a primary goal rather than actual energy saving. They only encourage players to save in-game energy. We won't add all of those to this list. There are also 3 games/apps in the last chapter which are specified in that chapter so those won't be added either.

Playne : The meditation Game

Introduction

Grow a beautiful island as you build a daily habit of mindfulness and meditation. Experience relaxation and learn ways to care for your mental wellbeing.

Youtube link = https://youtu.be/P4JCE1oKjGs

About Playne

- Designed to help you learn and build a daily habit of meditation.
- Discover the benefits of meditation & mindfulness.
- Learn tools that can help you care for your mental wellbeing.

Gameplay features

- Beautiful island that grows and transforms with your daily meditation.
- Grow different species of trees and create unique biomes that reflect your journey.
- Change the weather and time to create an immersive relaxing ambience.
- Create your own serene nature spaces by planting trees and flora in sandbox mode.
- Complete Playne to unlock a massive island for you to explore and grow with mindfulness.

Create and customise deeply relaxing environments

Select the scenery, choose the weather, pick a time, put your headphones on and begin the journey to your inner world and discover the various aspects of your beautiful self.

A companion for your journey

Talk to fox to discover the story of Playne and to find out how to approach healthy living and build healthy habits.

Source:
https://energy.techno-science.ca/en/energy-games.php

Concept

Insert Game Name* is a game in which the player needs to maintain the environment in their game. They can do this by managing the real life power consumption of their CTOUCH touchscreen.

When the game starts, you are in a beautiful world full of mountains, forests, grasslands, animals, you name it. Every day, there will be an update moment in which the power consumption of the last day will be translated to changes in the game world. When the screen usage of that day was bad, the forests will thin out and lose their leaves, grass will die out, animals will disappear, etc. In contrast, when the screen usage is good, the trees will grow bright green leaves, grasslands will grow flowers, animals will flourish, etc.

By creating this dynamic, it should be a natural instinct for the player to want to work towards a better looking world and therefore it should encourage them to think about the screen usage more than they did before.

When the player manages the screen usage well, they get rewarded with the opportunity to create their own animal. They can name the animal and give them colors/textures to make them recognizable.