All changes made to the Game Design Document in our final product are highlighted

Game Design Document

Team Members' Names and Emails

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Game Name

Fish Out of Water

Elevator Pitch

Fish Out of Water is a role-playing action-adventure game meant to raise awareness to water pollution and water conservation. You play as a fish navigating through a city's water system and supplies to find your way back to your home tank, while encountering many different obstacles. The game displays the negative effects of water pollution through different characters and situations, and incorporates well-meaning actions the player could take to save their water system. The game's many different actions and possibilities lends to its replayability. This game incorporates *Pokemon*-style elements while placing the individual in an educational environment, allowing the player to explore the many aspects of water in the modern world. The narrative follows a cognizant fish trying to find their way back home and incorporates fantasy-like elements. The player is encouraged to discover and explore the game's world and defeat opponents along the way. Could you help the fish out of water find their way back home? :,) <3

Learning Aspects

Learning Domains

- water pollution
- marine life and health
- respect for city water systems
- **Additions:**
    - **Sewer system health**
    - **Predator-prey relationships**
    - **Sewer system pollution**

Target Audiences

Youth of the ages of 6+

Target Contexts

K-8 during the "water" unit informally; could also be played during free-time with no context. Could be played via app or executable program.

Learning Objectives

- explain the negative effects of human actions on marine life/water health/human water supplies
- identify common issues with sewer system health and select the correct methods for preventing those problems
- identify predator-prey relationships within marine organisms

Prerequisite Knowledge

- drinking/personal-use water undergoes specific processes before it reaches our homes
- general awareness of water pollution

Related Games for these Learning Objectives and the Gap

What sets this project apart?

- new perspective/environment (play as a fish in water)
- branching paths
- incorporates real-time effects with the player's choices
- focuses on education within an action game
- choose-your-own-adventure but with a set end goal

Influences (Brief)

- *Finding Nemo*
  - Medium: Film
  - Explanation: The protagonist of the film undergoes a similar situation (but in reverse) as the protagonist of the game. In the film, Nemo's dad tries to find his son and meets many different characters and comes across a variety of situations along the way, while Nemo explores life in the fish tank.
- *Pokemon*
  - Medium: Game

    - Explanation: The combat style of *Pokemon* influences the combat style of *Fish Out of Water* by giving the player a set variety of actions to choose, while incorporating an HP system. Its simplistic turn-based combat sequence felt like a great fit in the predominantly action-adventure game.
- *Club Penguin: PSA Missions*
    - Medium: Game
    - Explanation: Penguin Secret Agency missions led to a specific end goal by letting players follow a set path, yet the player had the option of exploring many different areas and features of the island. The player could interact with NPCs, objects, and side quests and gained rewards at the end of the mission. *Fish Out of Water* will be incorporating the same general principle of an explorable world beyond the set goal, and including rewards.

Kids' Related Game Genres

- action (turn-based)
    - Pokemon
    - Fortnite
- adventure
    - Minecraft
- role-playing
    - Roblox

Game Aesthetics

- fantasy/narrative: a talking fish explores the big city to find their way back home
- discovery: discovers the many different components of a city's water system and effects of pollution
- challenge: meet different opponents to get past

Beyond Chocolate Covered Broccoli

- create a world where the player can test theories about how things work & observe the results/implications of different decisions/behaviors
- players manipulate the social scenarios/situations via making good/bad choices which directly affect their gameplay
- put players in touch with what is fundamentally engaging about the subject, and help them build a scaffolding of core concepts, and motivate them to go deeper

Core Gameplay Mechanics (Brief)

- A **choose-your-own adventure model** separated into **different stages** referencing different scenarios in a variety of water habitats and water system locations **(we instead chose to focus on one water system: the sewer system)**. By incorporating a collection system, the player is encouraged to visit many stages in order to gain

rewards; the collection system serves as the player's record of progress through the game **(didn't make sense to implement a collection system)**

- The game's combat system strongly reflects ***Pokemon*-style fighting** where the player has a variety of actions to perform while fighting their opponent. It involves an HP system, multiple lives in the event that combat is lost **(chose to have only one life for combat, but did implement a "life meter" for each combat battle),** and a pollution meter. (world ends when the meter is filled)

- Throughout the game, the player makes a series of choices which could either positively or negatively **affect the current game environment**. The choices influence the opponents, as well as the general course of the game.

Assessment Measures

- pollution meter: keeps track of their good and bad decisions that either benefit or harm the environment
    - ex. "you found garbage." and displays a list of choices that range from various levels of good/bad which contribute to the score
- implement score/rating system on how well the level was completed
    - similar to Candy Crush model
    - **(This was removed, since we don't have multiple levels, just one with the sewer system)**

Player Interaction Patterns and Modes

Player Interaction Pattern

Single player vs. game.

Player Modes

- Combat Mode: Player is given a set of choices that could be used against their opponent, as well as specific multiple-choice questions that could be answered to deal damage **(have multiple-choice questions throughout the game instead)**
- Story Mode: Follows a single sewer world that explicitly asks questions and weighs the value of their decisions on the pollution meter.
- Mini-Game mode: players can beat levels to earn boosts for the regular world games **(This was removed, and we instead have side quests for the user -- collection of pipes)**

Gameplay Objectives

- Exploration: Fish is encouraged to explore the different phases of the game and solve each area's respective puzzles/questions to decrease pollution.

- Solution: Player has to make correct decisions in order to decrease pollution in an area and beat the different worlds.
- Rescue/Escape: Player has to make their way back home to their tank given the tools they are equipped with.

Procedures/Actions

Player can move around a 2D map and certain areas using WASD. Specific areas would give them a chance to enter combat mode, and introduces NPCs that progress story mode.

Actions in combat include the ability to choose their actions given a variety. Player can move to dodge certain attacks. **(We did not let the player move during combat, instead we implemented turn-based combat)**

Rules

- **Power-Ups**
  - By incorporating a collection system **(didn't make sense to implement a collection system)**, the user is encouraged to travel the area in order to gain specific tools in order to face the final boss to make their way back home. The tools are reserved for their final altercation and cannot be used for other situations.
    - **This is implemented with the side quest, where users get a power-up if they collect enough pipes and find the secret room**
- **Health**
  - The pollution meter dictates the player's success throughout the game, and can increase by the player making bad decisions or by losing combat. The meter decreases when the player makes good decisions or saves an area.
- **Lives**
  - Combat mode incorporates lives. if you lose all lives, you lose combat mode. **(one life, but there is a life meter in combat and if it empties out, you lose combat)**
- **Exploration**
  - Exploration of an area is restricted to the specific map.

Objects/Entities

- world map
- characters
- pollution bar
- choices in combat as well as combat graphics

- tools/boosts in collection system as well as general use

Core Gameplay Mechanics (Detailed)

- Combat Mechanics
  - Details: While exploring a certain area in the map, the user may randomly happen upon combat mode. In this mode, players are given a choice to fight alone, or given a choice to "shapeshift" into another character. They must make this decision wisely, since they get points for choosing an animal that is a predator of their opponent. During gameplay, users can fight by choosing an action, and can dodge their opponent's actions. If players are hit, their life meter decreases and the game ends once their life meter empties out.
  - How it works: The player used WASD to dodge attacks, and can use their keys to initiate their own attacks. Players can also click on boosts to give them an advantage over their opponent. **(changed- see below)**

  - How it works: The player is given a set of choices, and can choose to attack, shapeshift, or surrender. The attack damage is randomized based on the animal the player is fighting as, and the opponent's damage is also randomized.

- Movement/Story Mechanics
  - Details: The player is put in a certain area upon choosing a level once the game starts. The map contains specific areas which could induce combat mode. The map encompasses an entire restricted area. The player walks around and meets NPCs that give the player a choice which directly influences their area's pollution levels. The map also allows for exploration to collect pipe pieces to complete a side quest and gain an advantage at the end.
  - How it works: The player uses WASD **(arrow keys)** to move around the map and bump into NPCs to talk to them. Specific areas are graphically distinguished in the map area designated to induce combat. Specific buildings exist for the player to enter to play a short mini-game to gain tools.**(removed, and instead we have locations of random pipe pieces for the side quest that users can pick up)** The questions of the NPCs are given in multiple-choice format.
- Map Choosing/Exploration
  - Details: The player will have a variety of different paths to take during a level, and will have a variety of different options to take depending on what path they want to explore. Exploration will be rewarded, and is needed in order to be able to get the best possible score on our rating system **(changed: exploration is needed in order to complete side quest)**. Each world will have its own specific special tool that needs to be acquired in order to defeat the boss easily. **(removed)**
  - How it works: Using WASD **(arrow keys)**, the player will be able to explore each stage, walking around and finding new objects to interact with. What

has been interacted with will be kept track of and will deal with the following pollution mechanic and the aforementioned rating system. The world itself will be traversed with WASD **(arrow keys)** as well.

- Pollution Mechanics
  - Details: Pollution is the main antagonist of our game. The level depicts different ways of how pollution can affect a sewer system and/or leads back to affecting the water human uses everyday. There will be a bar on the side of the screen that can be seen throughout the game and the player will have to start the world over again if the bar fills all the way up (resulting in devastating effects from an oil spill, etc.)
  - How it works: Every choice the player makes throughout the world will either positively affect (bar meter goes down) or negatively affect (bar meter fills up) the pollution meter. If the bar fills up before the fish completes the level, the player will have to start over.

Player Choices/Freedoms

- freedom to fail: players can choose the wrong options and make their gameplay harder
- freedom to fashion identities: players have the option to be peaceful or aggressive in combat
- freedom of interpretation: players have no similar games due to the differences in choices
- freedom of effort: combat could be relaxed or intense depending on how the player wants to approach the situation
- freedom to experiment: game encourages players to explore the world and approach different situations with solutions

Feedback

- **Effects of Water Pollution**
  - "Oh no! [action] has increased the pollution of water around you! Try thinking about the consequences of your actions."
  - "Hooray! You're one step closer to cleaning up your water!"
  - "Excellent work! You've cleaned up [level]! You're one step closer to going back home. :)"
    - description of actions
    - ex. "Thanks for [ex. cutting a plastic ring], [a turtle will be at your service]."
    - ex. "Unfortunately, because [you spilled oil in the reservoir], [you slipped back a few miles].
- **Marine Life Relationships**
  - "You chose [animal] to help you defeat your opponent!"
    - positive: ""Splendid! Your opponent is afraid of [animal]."
    - negative: "Yikes! Your opponent is a dangerous predator to [animal].
  - **(no particular written feedback; more representative of how the opponent reacts to the creature)**

- **Pollution meter** explicity displays the player's progress towards saving the level.
- **Boss Level**
  - "Aw man! Unfortunately, you did not beat [The Polluter]. Maybe you should replay [the world that matches with the most questions the player missed] before attempting to battle [The Polluter] again!

Story and Gameplay

Story (Brief)

We follow a fish that was displaced from its tank with the ability to shapeshift into different marine animals. The fish tries to find their way back home while journeying through different polluted areas to solve their own respective problems. Once they gather all the tools across the map **(tools are now pipes)**, the fish face The Polluter's henchmen to get back to their fish tank.

Story (Detailed)

The main character, the fish (whose name is determined by the player), is flushed down the toilet by [The Polluter] to get back at the fish's owner, [The Activist], and ends up in the sewer system. He falls in a vat of radioactive material, and gains the ability to shapeshift into any animal to aid in combat.

Players can choose a world to begin their adventure **(no longer multiple worlds)**, which involves exploration of a sewer system, an oil spill, an area polluted with plastic, and a water tank.

Sewer-topia is home to a variety of mutated garbage fish and their innocent inhabitants. Living in puddles of oil grease, toilet waste, and household chemicals, the sewer system is poorly kept and maintained by its above-ground users which resulted in a massive clog and a broken filtration system. The user must lurk through the musk of the sewer system in search of a filtration piece to ensure the safety of the water before it heads into the reservoir, as well as find the source of the clog. However, Sewer-topia is home to a variety of hostile creatures looking to destroy the water system. However, these creatures carry a secret that will help the player save Sewer-topia. This area is meant to focus on how our sewer system plays a role in the water we use on a daily basis and how our water use affects the planet's water supply.

After developing the first world, we decided that the game is complete, containing all mechanics and testing all learning objectives. Thus, the following 3 worlds will not be developed, and we instead focused on developing the first world completely.

Talk Trash begins with a turtle caught in a plastic ring, needing our help to break free. Throughout the course of the world, players try to find any tool that could help set the turtle free. The player begins by talking to characters on the map, all of which are affected by plastic pollution. The player collects tools to help with their problems, which get them other tools. They continue to help smaller characters until they are able to get to

the final tool to remove the plastic from the turtle. Due to its replayability, there is no one tool that the players are looking for. There may be a variety of tools that can solve the problem, and players will have to decide whether they have found the right tool. Once they do this, the level is complete and the turtle thanks the player by sending them closer to home.

OH-NOil Spill: Oh no! Captain Rogers fell asleep at the wheel while driving his ship back to the pier causing it to run into jagged rocks. Now, oil is spilling out into the ocean at a high rate! Captain Rogers has anchored down his ship and is sitting on the shore, feeling disappointed. There are several species of bacteria that feed on petroleum. Your job is to venture throughout the sea and find which specific bacteria will be able to get the job done! Once you find out which bacteria can complete this successfully, send them over to the spill. Be careful though! Some bacteria can infect a fish and multiply rapidly until it kills it. Can you make Captain Rogers feel better about his HUGE mistake? This mission will be a challenge. Are you up for it?

The Dam; where human ingenuity meets nature. A polluted, freshwater river follows its natural course down into a valley, but there, at the bottom, exists a massive dam serving to generate power for human civilization at the cost of the local environment. There the player is tasked with cleaning up the river and updating the dam so that it is safer to keep running as well as better for the environment. The player must explore the depths of the river and the dam in order to find a way to keep human interests and wildlife interests in balance and help the ecosystem. Exploration is dangerous, and hostile creatures hamper the player at every turn, but a few surprising allies may show up to help the player progress. This area is meant to show how humans and wildlife can indeed coexist and how there is still time for pollution and the mistakes of the past to be fixed, but only if we act now.

Each level has random locations where, if the player moves onto that spot, the combat starts. **(spots aren't random, but they are still hidden)**. Players must choose the animal to shapeshift into wisely, in order to pick one that is a predator of their opponent, which gives them a boost.

Once all the worlds are complete, the player journeys to the Final Boss World where they face The Polluter's henchman **(no longer separate world)**. Throughout each of the previous worlds, players had been collecting tools to help them beat this boss. Once the player defeats The Polluter's henchman, the fish is able to safely return back home.

Gameplay (Brief)

The player has the option to travel to different worlds and fight and explore your way through to solve the area's unique problems. The player seeks out specific tools in each area to solve another area's problem and reduce their pollution meter via entering combat mode, completing certain requests/questions, as well as using the mini-game feature to get power-ups/boosts to help them in combat **(prev. mentioned)**. Once a player reduces the entire pollution meter, the area is deemed "completed" and provides the player a tool to use to beat the final boss. The final boss is a prolonged replayable combat mode which serves as their last barrier back home **(the entire map is replayable; not the final boss)**.

Gameplay (Detailed)

After the introductory scene, the game opens to a large map in which the player could choose which area they want to explore first. Each area has their own unique NPCs and their own problems that must be solved using the player's knowledge of pollution solutions. There is one main NPC for each world **(Since we are only doing one world, there are 6 NPC's in it)**, whose problem the player must solve in order to beat the world and remove the pollution **(problems have been changed into questions they ask, same principle needing to get them right to move forward)**. The side NPCs also have problems that fit in the theme of the world, and their problems must be solved first in order to unlock the tools to help another NPC. Essentially, players are hunting for smaller tools that help them unlock the final tools and beat the world. In helping these NPCs, players will learn more about the different forms of pollution and what can be done to stop it.

Combat mode is entered at random when a player enters a specific combat zone and pushes the player to a Pokemon-style screen where the player is given a variety of options to attack. The shape-shifting feature of the fish ties in when combat mode asks how they would like to fight their opponent; if they choose the correct predator, the opponent is weakened and combat is in the player's favor; if the player chooses the incorrect predator, combat is harder and the player loses specific lives. If combat is lost, the area's pollution meter rises.

In order to decrease an area's pollution meter, the correct decisions must be made and combat must be won. To save the area, the pollution meter must be empty. Once an area is cleared, the player receives a certain tool to fight the final boss, and the player is one step closer to fighting the final boss.

The final boss fight is a prolonged combat mode that asks a variety of questions that were asked throughout the game, and the player can use specific tools in order to fight the boss. The combat scene is replayable in case the player loses. Once the final boss is defeated, the final scene is played out of the fish back at its home tank.

Assets Needed

Graphical

- Characters List
    - *[The Fish]*
    - *[The Polluter]*
    - *[The Activist]*
    - *Main character to help in each level*
    - *Side characters in each level*
    - *Combat opponents*
    - *Bosses*
- Textures:
    - Underwater textures
    - Wall textures

    - Ground textures
    - Combat textures (for each map)
- Environment Art/Textures:
    - Home environment (Introductory scene)
    - Sewer-Topia
    - Talk Trash ***no longer a part of our development***
    - OH-NOil Spill ***no longer a part of our development***
    - The Dam ***no longer a part of our development***
    - Final Boss World
    - Combat areas
    - Mini-game modes

Audio

- Music List (Ambient noises, BGM, etc.)
    - bubble noises, other water noises
    - "Under the Sea"
    - environmental noises that reflect the mood
- Sound List (SFX)
    - animal noises
    - combat noises
    - swimming/movement noises
    - talking noises for NPCs ***no longer a part of our development***
    - minigame noises ***no longer a part of our development***
    - tool noises ***no longer a part of our development***
    - other noises that are world/level specific

Additional Pictures/Information?

Any visuals you want to provide to help describe your game design concept.

Minimum Viable Product

One Area: Sewer-Topia

- including: combat area (predator prey relationships), NPCs, general problem-solving
- pollution meter
- map design
- focuses on predator-prey relationships and how to solve the sewer environment

We will still be testing the following learning objectives, but there will be fewer choices due to only one world

- explain the negative effects of human actions on marine life/water health/human water supplies
- identify predator-prey relationships within marine organisms

The mechanics will still be the same, with combat mechanics, pollution mechanics, and exploration mechanics. The story mechanics will be limited, and also each of these mechanics will offer less freedom at this stage of development.

From the point of view of game play aesthetics, there will still be challenge and discovery, but the fantasy elements will be added with the complete story line in agile development.

Better graphics are going to be included with agile development, so at this stage, the graphics will be general in order to get the point across

Agile Development

- Add in the other worlds
    - replica of first world, with graphics and learning changes
    - ***no longer a part of our development, as it doesn't make sense to put in time to create replicas of the first world and just change the questions/map***
- Add in minigame mode
    - ties in with power-up development
    - ***no longer a part of our development, there is a power-up screen that you have to traverse if you get all of the pipes, but it isn't a minigame***
- Add the story line
    - including final stage which sums up game problems
- Collections system

Team

- Dea
    - strengths: familiarity with javascript, decent-ish graphic design skills, can work for long periods of time, has chegg account
    - opportunities to learn: unfamiliar with phaser, first large game project, little experience with design patterns and strategies
- Ishika
    - strengths: artist, good debugger, don't procrastinate, organized
    - opportunities to learn: unfamiliar with javascript, first large game project
- Taylor
    - strengths: organized, familiar with js, has design skills, have developed other games
    - opportunities to learn: unfamiliar with phaser and platforms we will be using in this class, not including every detail and executing the big picture first
- Aidan
    - strengths: decent coder, graphic design, have developed other games (but in game engine and certainly less involved than this)
    - opportunities to learn: unfamiliar with phaser, first large game project

Work Plan (See github repo for updated work plan)

- Dea
    - combat mode
        - shapeshifting mechanics
    - graphics
- Ishika
    - NPCs / map design (combat area initialize)
    - graphics
- Taylor
    - Pollution meter
    - graphics
- Aidan
    - graphics, movement

This is a rough idea of who will be in charge of which part of the game, but it is subject to change and we will likely work on at least the graphics together.