DOGGY DASH

Research Project 2024 – bilateral integration

Game Design Document

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# Overview

## Theme / Setting / Genre

Educational Game.

## Core Gameplay Mechanics Brief

* Horizontal Movement
* Feeding Mechanism
* Doggy Points
* Timer Display
* AI predictive gameplay
* Data analytics

## Targeted platforms

Windows Desktop

## Monetization model (Brief/Document)

Available for free on itch.io

## Project Scope

* 3 Weeks
* Cost: R 0.00
* Time scale: 1-3 weeks
* Team size: 3 members
  + Melissa Roodt: Research student and game developer.
  + Dr Japie Greeff: Research leader and game developer expert.
  + Dr Reolyn Heymann: Co-research leader and occupational therapist.

## The Elevator Pitch

Serious game that aids in bilateral rehabilitation in a calm, relaxing environment. Traverse the landscape on a horizontal plane to give your pet a delicious snack and earn doggy treats to purchase new fluffy friends.

## Project Description (Brief)

This project is a serious game aimed at aiding in bilateral integration. The serious game forms part of a research study to evaluate the effectiveness of using a serious game in occupational therapy. The project seeks to create an engaging and fun gameplay to refocus user attention on the gameplay instead of tedious rehabilitation process.

## Project Description (Detailed)

This project is a serious game aimed at aiding in bilateral integration. This project form part of a large study for Honors in IT. The research study is about assessing the effectiveness of an interface to connect multiple wireless devices to the Unity game engine. This will lead to the creation of a serious game to aid in bilateral integration. The game will be assess using expert reviews. The project seeks to answer the following research questions:

* The feasibility of connecting multiple wireless devices to the Unity game engine through an interface.
* The benefits of using multiple devices to assist children in midline crossing.
* The advantages of integrating features like AI predictive game difficulty.
* The benefits of incorporating features such as data analysis for occupational therapists.

## What sets this project apart?

* Serious game that aids in bilateral integration
* Emphasis on auditory and visual stimulation to ensure player retention.
* Requires the use of multiple wireless devices to play the game.
* AI gameplay prediction which will increase player performance
* Data analysis for occupational therapist to evaluate player performance.

## Core Gameplay Mechanics (Detailed)

* Horizontal Movement: Navigate the character from the start point to the goal point by moving left and right.
* Feeding Mechanism: Allow the player to feed the dog a doggy treat.
* Doggy Points: Doggy point is the currency to buy new pets.
* Timer Display: Implement a timer to show the passage of daytime and the time elapsed in the current level.
* AI predictive gameplay: An Ai system to predict player performance
* Data analytics: The data analytics will be used to provide insight into player performance and progression for occupational therapists.

# Story and Gameplay

## Story Brief

In a serene park setting, the player is guided by a calming voice to learn how to feed their pet dog using doggy treats, which serve as both currency and food. The environment remains tranquil to maintain a positive and encouraging gameplay experience.

## Story Detailed

The player is situated in a peaceful greenery park where the sounds of wind, brush, and birds chirping can occasionally be heard. During the first playthrough, an introduction is provided by a soothing voice that instructs the player on basic actions such as moving left and right and feeding the dog. The voice encourages the player with phrases like “welcome little one” and “I see you want to feed your furry friend again.” It guides the player through the process of earning doggy points by feeding the pet and hints at the possibility of acquiring more pets with these points. As night approaches, the voice gently reminds the player to tuck in their furry friend.

After the introduction, the pet's attention-catching behaviour, such as barking and jumping, draws the player back into the game, while the peaceful ambiance remains to ensure a relaxing experience. Visual aids and auditory cues encourage the player to interact with their pet continuously, while the gradual transition from dusk to dawn adds a dynamic element to the serene environment.

## Gameplay Brief

The player learns to navigate the park, feed their dog, and earn doggy points while being encouraged by various visual and auditory cues. The game includes a timer to indicate the passage of daytime and level duration, with bonuses awarded for putting the dog to bed before the timer runs out.

## Gameplay Detailed

* Movement The player is instructed to move left and right to navigate the park and reach the dog.
* Feeding Mechanism: The player learns to feed the dog by dropping doggy treats, then earn doggy points as currency to purchase new dogs.
* Encouragements for Movement:
  + After receiving a treat, the dog moves to a new predetermined point, encouraging the player to follow.
  + A visual aid appears every 10 seconds to guide the player towards the dog, with the dog responding happily when reached.
* Encouragements for Feeding:
  + Positive visual effects and sounds play when the player is prompted to feed the dog.
  + Doggy points are awarded for each treat given.
* Idle Prevention:
  + A timer displays the passage of daytime and level duration.
  + If the timer runs out, the game ends but saves all progress.
  + Putting the dog to bed before the timer runs out grants a bonus multiplier on all doggy points earned during the game.

# Assets

## 2D

* Player Sprites
  + Boy
* Dogs
  + Shithtzu Dog
  + Golden Retriever Dog
  + Jack Russell Dog
* Collectables
  + Treat
* Environment Sprites
  + Background
  + Middle ground
  + Foreground
  + Grass
  + Tree
  + Bush
  + Leaf
  + Tiles
  + Birds
  + Doggy House

## Sound

* Sound List (Player)
  + Footstep
  + Throw
* Sound List (Dog)
  + Bark
  + Crunch
* Sound List (Ambient)
  + Birds
  + Wind
* Sound List (Trigger Events)
  + Game end
  + Feed dog
* Sound List (Introduction)
  + Voice over

## Code

* Character Scripts (Player Input/ Player Movement/ Player Action)
* Environment (Birds/ Leaves/ Background/ Game controller)
* Dog Scripts (Dog Movement/ Dog behaviour)
* UI (Timer, Dog Treats)
* AI Script
* Data analytics Script
* Menu (Start Menu/ Loading Screen)

## Animation

* Environment Animations (Birds/ Leaves/ Background)
* Player (Idle, Move, Action)
* Dog (Idle, Move, Jump).

# Schedule

* Design and develop the interface to connect wireless devices
* 1 Day
  + Design the interface for connecting wireless devices
  + Design the interface for mobile devices
  + Use Unity Net code to connect devices to the game (game=server and wireless device = client)
  + Unit Test
* Design and develop the horizontal movement mechanic
* 1 Day
  + Design the player sprite
  + Develop the player input script/ player movement/ player action script
  + Integrate the wireless device as input
  + Unit Test
* Design and develop the Dog AI, Feeding Mechanism and Doggy Points
  + 1 Day
  + Design the dog and dog treat
  + Develop the dog AI script (get treat -> move to next point if point = end stop game)
  + Design the doggy points UI
  + Develop the doggy points script
* Design and develop the environment and timer display
  + 1 Day
  + Desing the environment sprites
  + Develop the environment scripts (leaves, birds, wind timers)
  + Design the background sprites
  + Develop the background behaviour (dusk to dawn)
  + Design the UI timer
  + Develop the UI Day timer script
* Desing and develop the AI predictive gameplay
  + 1 Day
  + Develop the AI predictive gameplay script
  + Unit Test
* Design and develop the data analytics
  + 1 Day
  + Desing the UI for data analytics
  + Develop the data analytics script (collection script and display script)