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| ICT371 Project |
| Wildlife Campus Project |
| Game Design Document |
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# Project Description

This project was proposed by Victor Alvarez at Murdoch University. The objective of this project is to design and implement a serious game with the goal of supporting the education of students with regards to wildlife conservation in the local Murdoch area. The game will be designed for the “Epson Moverio BT-200” smart-glasses, and will feature an engaging real-world experience. Our group has organized a meeting with Victor in order to establish his expectations as a client, and to then synchronize those with the requirements of the unit.

# Purpose of the Game

This game will be designed to provide an engaging and interactive learning tool. This tool will be used by environmental students to enhance their study of the local flora and fauna. The game will also highlight conservation programs, and threats to native wildlife.

# Game Overview

The ICT371 Wildlife Campus Project is a serious game that will engage students in a real world experience and support learning about the wildlife at the Murdoch South Street camups.

## Game Concept

The ICT371 Wildlife Campus Project will involve a real-life augmented reality field trip through the campus. Players will be guided to discover the wetlands in Murdoch, various plants and animals, cockatoo nest tubes and microbat roosting boxes, and possibly key conservation buildings and programs. At set locations, information about the local environment will be provided, and students will be required to answer quizzes based on the information they have hopefully learned.

The game will also link to the Climate Watch website: <http://www.climatewatch.org.au/>

## Game Design

This game will be developed in the Unity Engine – with heavy use of the C# programming language – to provide easier development for the “Epson Moverio BT-200” smart-glasses, utilizing the “Vuforia” SDK to develop the augmented reality. The GPS system imbedded in the “Moverio” will be leveraged to allow tracking of the player position and triggering questions when in appropriate positions. User input will be achieved via the touch pad which accompanies the “Epson Moverio BT-200” smart-glasses.

## Game Flow

When the game starts the player will be presented with a login screen. Logging in allows player data to be saved for future reference. If the user does not have an existing account they will be prompted to create a new one. Once logged in, the user can then select to either review their report data, view the objects they have collected in the gallery or take an excursion.

Starting a new excursion allows the player to select which animal they would like to follow around the Murdoch campus. Initial design will allow for the ‘Black Cockatoo’ only, however this can be expanded later to add other campus wildlife.

Selecting the ‘Black Cockatoo’ option then provides the user with the options of exploring the cockatoo’s birth, or two other different life cycles. These excursion scenes will then take the player on a journey through Murdoch campus. This is game flow will be similar to the following:

* Open the app.
* A menu will appear, will allow a user to log in to their account.
  + Their account stores their learning information.
* Once they’ve logged in, they choose an animal they want to be tested on.
  + Only available one will be Cockatoo, the rest will be greyed out.
  + Since we need to have multiple levels, we may have a Cockatoo life cycle level and a Cockatoo conservation level. Each take you to different places and show you different things.
* Create a character that sends you on a mission to collect information about the animal.
* The character will give you a map, saying that they have identified key areas.
* A map will appear on screen, telling the user where to go next, similar to Google Maps.
* Once they arrive within a certain proximity to the destination, an image of the scan image will appear on screen, telling the user to find it.
* Once the user finds the object in the image, they can scan it, and a 3D rendering of something will appear.
  + This rendering is relevant to what the information will be about.
* Once the user selects the button in the center of the 3D rendering, some information will be displayed, explaining a part of the Cockatoo knowledge base.
* The character will then reappear, asking the character some questions about the information they were just provided.
* The user then moves on to the next point to repeat the process.
* Once all waypoints have been completed, the character asks the user to report back.

When they reach the required waypoints, the player will be given the option to take a quiz which loads the ’Dialogue’ scene. Completing the quiz then returns the player to the main action scene. Once all waypoints have been achieved the player will have successfully completed the selected life cycle. Upon completion of the selected life cycle, the player will return to the main menu to select either a new animal or view the report data for the user.

Game flow for the report data will be similar to the following:

* Open the app.
* A menu will appear will allow a user to log in to their account.
  + Their account stores their learning information.
* Once they’ve logged in, the app will see whether they have any new excursions.
  + If they have an unreported excursion, the character will appear and tell them a story based on their performance.
    - 0-25, 25-50, 50-75, 75-100. Four different sets of dialogue.
* The menu will then show the user their score, their right and wrong answers for questions, etc.

# Storytelling

A requirement of the unit project is to weave storytelling into the serious game with the objective of making the game compelling and therefore increase user retention. Our current idea for a story sets the user as a character sent from the future to learn about environmental conservation to avoid a future where the local ecosystem is destroyed. The augmented reality glasses become a storytelling prop in themselves, as well as providing an interface for the game.

# Unique Features

* Augmented Reality (AR) integration.
* GPS Real-world interactions.
* Immediately applicable to teaching users about Murdoch’s biodiversity.

# Data Capturing

The game will collect data during every game and play session. The data we are interested in currently includes quiz results and objective progression. These can be compared to baselines, as well as the student’s past performance. This establishes what the student knows, what they have learnt, and helps to identify gaps in their knowledge that they can improve on (by following suggestions from the game). Report screens can be generated from this information. Following a meeting with Victor, the data of interest can be clarified.

# Background Research

The “Epson Moverio BT-200” smart-glasses have a 3D display, touchscreen control, a front facing camera, and include headphones for audio. These elements must be considered when designing the gameplay and operation of our game. The glasses appear to have an average battery life of 20 minutes, which will need to be considered when asking users to navigate the real world playing space. Client for the project, Dr Victor Alvarez has worked on a similar project in the past and his experience and knowledge will be greatly beneficial when it comes to the design of our game.

# Development Team

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