

Vocabulary Learning Tool

Final Year Project Report

DT228

BSc in Computer Science

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Abstract

The main aim of this project is to help the target user with learning disabilities, to understand vocabulary through the use of symbols and animations.

Declaration

I hereby declare that the work described in this dissertation is, except where otherwise stated, entirely my own work and has not been submitted as an exercise for a degree at this or any other university.

Signed:

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Kieran Hogan

4th April 2016

Acknowledgements

I’d like to thank…

Orlagh, N2y (symbolstix), Damian, John, parents, other project people

Table of Contents

*(These are suggested contents only. You can add or modify if required)*

1. Introduction
   1. Overview of the project and the background behind it.
      1. Target user cannot learn language through conventional reading and writing due to disabilities. Project is to develop a tablet based application that helps the user learn symbols to expand their core vocabulary. Must be done in a fun and interactive manner. Will be paired with a web interface that tracks the user’s data, and outputs for parent/therapist analysis.
   2. Project Objectives
      1. The main goal of the project is to teach the specific user the meaning of symbols, in a fun and interactive manner. To ensure that this goal is accurate enough. To ensure that this goal is achieved, regular contact was made with the user, who has provided huge help in the research stages.
      2. To develop tablet based app for particular child user with particular disabilities, not general
      3. To assist the user to learn symbol
      4. Whilst also capturing data
      5. Get hold of symbol set
      6. Universal design
      7. Understand dissabilities
   3. Project Challenges
      1. Catering to the particular user, creating a fun, enjoyable system that’s user friendly, which addresses the problem and helps the user learn symbolic vocabulary.
      2. Don’t get to see the user, through the parent, 3rd party info, child might not get to use the app
      3. Time and difficulty etc
      4. Opportunity sharing info
   4. Structure of the document
      1. The project has been broken down into various sections
      2. Walkthrough of the document sections
      3. Overview

Goal is where you want to be, objective is how to get there

Objective support the goal, consistent with goal

1. Research – CORE FOCUS – DISABILITIES AND Technologies
   1. Eg. Research related to identifying the problem that this project solves, research into solution definition
      1. Disabilities (and their effect on learning)
      2. Language Learning (and how people with disabilities learn differently)
      3. Alternative solutions and similar applications addressing user group, like AAC and Acorn
   2. An overview of the technologies evaluated and selected or rejected and the rationale behind the key decisions.
      1. Choosing Android over IOS as tablet platform
      2. Choosing Unity over Android native as language/dev engine
      3. Choosing PHP over Node
      4. Choosing MySQL over NoSQL or Oracle
      5. JUSTIFY ALL
      6. Learning through animation, serious learning game
2. Design – CORE FOCUS – User Centric Design (objective) DIAGRAMS, SCREENSHOTS, STORYBOARDS, USERS EXPERIENCE, USER INTERFACE, USER CENTRIC APPROACH, INNTERACTION WITH USER
   1. Identification of a design methodology including why it was chosen
      1. TDD test driven design
      2. Scrum – iterative research, requirements analysis, design phases in first half, followed by iterative development, requirements and testing phases in the second half
   2. Design of each of the project components eg: the UI, Network, Project Demonstration, source code layout
      1. UI – Unity
         1. Big section, expand on system customisability, icon size, colours, symbols, design choices, justify everything! Screenshots, initial layout etc, feedback, changes, redesign
      2. Backend Unity
      3. MySQL – database
      4. PHP and HTML5 – back end / front end web
   3. Clearly identifying the list of features and use cases supported within the project.
      1. Use case diagrams (address two main users, Sophia and Orlagh
      2. Main features, priority for each

Put ARCHITECTURE IN DESIGN, TO GIVE STRUCTURE

1. IMPLEMENTATION (Architecture & Development, dev and prototyping, implementation) show code, connection to server etc
   1. Overview of the system architecture and a diagram to represent all of the key elements within the architecture.
      1. Diagram of high level architecture
      2. Class diagrams
   2. Details of each component within the project, problems encountered and resolved, challenges overcome or worked around.
      1. Unity
         1. Details about scenes/screens
         2. Scripts and controllers
         3. Animations (statemachines)
      2. MySQL database
         1. Data model
      3. PHP Web frontend
         1. Connecting to server
         2. Graphs with FusionCharts
   3. Identify key development components;
      1. Unity application
         1. User friendly UI using familiar and understandable symbols
         2. Engaging animation and interactivity
      2. Web application
         1. Graph useful information about users progress etc
   4. Identification/explanation of external APIs used versus own code ; List of classes of your code etc.
      1. Symbolstix symbols used with permission and licensee (n2y)
      2. Various scripts/classes list:
         1. PlayerController.cs, LevelManager.cs
         2. Login.php etc
         3. Any code/sprites used
2. System Validation – CORE FOCUS – Feedback from user
   1. Testing: What testing was performed, why it was selected and what are the key use cases within the project.
      1. User feedback from Orlagh, iteratively changing design of application and features
   2. Demonstration: Identify what features can be demonstrated and show screen shots or reference a video online to show the project demonstration (for audience not at demo)
      1. Youtube video of project demo
      2. ???
   3. Meetings, videos, chats, emails,
3. Project Plan – How that adapted, regular meetings with Damian, and group meetings and meeting user
   1. Project Plan analysis and review of how it changed from the initial proposal including explanation of what changed and why, and suggestions on how to address this if the project was repeated.
      1. Iterative research, requirements analysis and design phases marked the first half of the project, followed by development with intermittent design changes
      2. Initial gantt chart and note the time/objective changes. Changed main tech from android to unity deployed to android. Do a new one and compare how it panned out
      3. Late meetings with user lead to a lot of work late in the project, if doing again, would meet with her more regularly.
4. Conclusion
   1. Analysis of the projects key elements identify the key learning obtained from the project and recommendations and suggestions for how the work can be improved on continued into the future.
      1. Learned about the importance of user centric design, also specifically to users with disabilities such as Sophia
      2. Importance of regular meeting and benefits in terms of project management and goal completion
      3. Future work and continuation can include expanding the application, adding many features like connectivity between users, cater to colour blind and other users, deploy to IOS as opposed to android (more user friendly tablet platform) \*\*\*\*
5. Bibliography
   1. References etc
6. Appendix
   1. ?????

# Introduction