



Faculty of Computer Science and Information Technology

DysleRead for Dyslexic Children

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DysleRead for Dyslexic Children

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DYSLERead UNTUK KANAK-KANAK DISLEKSIA

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Projek ini merupakan salah satu keperluan untuk Ijazah Sarjana Muda Sains

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LIST OF ABBREVIATION

API	Application Programming Interface
IDE	Integrated Development Environment
iOS	iPhone Operating System
JDK	Java Development Kit
OS	Operating System
UI	User Interface
mGBL	mobile Game-Based Learning model

ABSTRACT

Dyslexia is a specific learning disability in which the individual has the difficulty to read, spell and write. A dyslexic individual is easily attracted to pictures rather than words. There are various approaches such as repeated reading, sight-word approach and phonic approach. The different dyslexic individual has a different reading pace. The teacher has to teach children with dyslexia using the flashcards. The dyslexic children also needed assistance from an adult to read. These days, many mobile applications are developed to assist the dyslexic individual to improve their reading, writing and spelling skills.

Therefore, it leads to the idea of proposing an Android mobile application to help dyslexic children. DysleRead aims to help the teacher at the Dyslexia Association of Sarawak Centre to help dyslexic children to improve their reading and spelling skills. DysleRead allows the teacher to set the reading cue for dyslexic children as they have a different reading pace. DysleRead also incorporates the sight-word and phonic approach.

ABSTRAK

Disleksia adalah masalah pembelajaran khusus di mana individu tersebut mempunyai kesukaran membaca, mengeja dan menulis. Selain itu, individu disleksia lebih mudah tertarik kepada gambar berbanding dengan perkataan. Terdapat pelbagai pendekatan seperti bacaan berulang, pendekatan 'sight-word' dan pendekatan fonetik. Setiap individu disleksia mempunyai kadar bacaan yang berbeza. Guru perlu mengajar kanak-kanak disleksia membaca menggunakan kad imbas. Kanak-kanak disleksia juga memerlukan bantuan daripada orang dewasa untuk membaca. Kini, banyak aplikasi mudah alih yang dicipta untuk membantu individu disleksia untuk meningkatkan kemahiran membaca, menulis dan mengeja.

Oleh itu, tercetuslah idea untuk mencipta aplikasi mudah alih Android untuk membantu kanak-kanak disleksia. DysleRead bertujuan untuk membantu guru di Dyslexia Association of Sarawak Centre untuk membantu kanak-kanak disleksia meningkatkan kemahiran membaca dan ejaan mereka. DysleRead membolehkan guru menetapkan isyarat membaca untuk kanak-kanak disleksia kerana mereka mempunyai kadar bacaan yang berbeza. DysleRead juga menggabungkan pendekatan 'sight-word' dan fonetik.

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION / BACKGROUND

Shaywitz (2003) stated that dyslexia is a specific learning disability that is neurobiological in origin. A person that suffered dyslexia might have trouble to read fluently, spell words correctly and learn a second language (Shaywitz, *Overcoming dyslexia: A new and complete science-based program for reading problems at any level*, 2003). International Dyslexia Association (2010) reported that 10% - 15% of the population in the world are dyslexic. Similarly, Harmonic Social Association (PSHM) stated that there were 10% - 15% of the primary school students having the symptoms of dyslexia in Malaysia (Ahmad, 2015). There are different ways to help dyslexic individuals to improve their reading such as sight words drills, repeated reading and syllable example (Fawcus, 2000). Sight words give a remarkable establishment to reading (McArthur, et al., 2015) as high-frequency sight words appear so often in the text that learning to read them on sight will increase children's reading fluency (Joseph, Nation, & Livversedge, 2013).

The aim of developing "DysleRead" is to provide more exciting, interesting, interactive and portable for the teachers to use to teach dyslexic children to read and spell at the same time. Currently, the dyslexic children require a one-to-one reading session with the teachers to learn how to read or spell as sometimes they have a very short span of attention. With the existing of this application, the children can learn how to read and spell independently. Besides, the interactive and interesting interface can keep the children's attention. Moreover, this application also aims to provide a better learning experience by using the mobile application approach.

1.2 PROBLEM STATEMENT

Currently, dyslexic students require assistance from adults with reading. An adult needs to present the flashcards to the students while reading. However, this kind of approach can be time-consuming as the children learn slower without assistance from an adult. Mr. Read V1.0 by Borhan, *et al.* (2015) was developed and it is the integration of the sight words approach. It is similar to how the flashcards are presented manually when the children are reading but without the assistance from an adult. The application was tested and the feedbacks from users then lead to the development of Mr. Read V2.0 by Borhan, *et al.* (2018) with some enhancement made.

Different dyslexic children would have a different reading pace. For children that have slower reading pace, they would need more cues for reading. However, the existing application does not have the function that allows the teachers to change the amount of cue for each module. The current mobile application also does not include the role of the teachers. It does not have the function for the teachers to create and login into the application. Mr. Read V2.0 also has limited contents for the modules. So, the children have limited vocabulary that they can learn. The current application also does not integrate a phonics approach. The teachers have to pronounce the letter sounds every time they teach the dyslexic children as it does not have the function where the children can tap on a certain letter to listen to the letter sounds.

1.3 SCOPE

The main target users for this mobile application are the dyslexic primary school students and the teachers that teach dyslexic children at the Dyslexia Association of Sarawak Centre. This application can run on all devices with Android 4.0 or newer version but not on devices with iOS. The modules included in the application are also limited to four modules only such as stories, songs, games and letter sounds. The games provided are also limited as it only covered some sight words found in the story module. Regardless of its interactive and cute interface, the application might not suitable for the normal primary school students as its contents are mainly designed for the dyslexic children.

1.4 OBJECTIVES

The objectives of this project are:

- To design a mobile application that allows the teacher to create and login to their account in the application.
- To develop a mobile application that allows the teacher to manage the amount for the cue for the module.
- To design a mobile application that allows the teacher to upload their reading materials.

1.5 BRIEF METHODOLOGY

Agile methodology is used for this project. Agile is defined as the ability to create and respond to change. It is an iterative development methodology that focuses on human interaction, their feedbacks, and the adaptability to changes in producing working products (Understanding the Agile Software Development Lifecycle and Process Workflow, 2018). The reason why agile is used in this project is because of its iterative nature. Agile allows changes in the real-time requirements if there is any risk occur. Changes can be also made according to the client's satisfaction due to agile's iterative process as it prioritises the client's satisfaction over technology and process. The involvement with the client will reduce the risks associated with the application. Agile methodology includes six phases which are phases such as concept, inception, iteration, release, production and retirement.

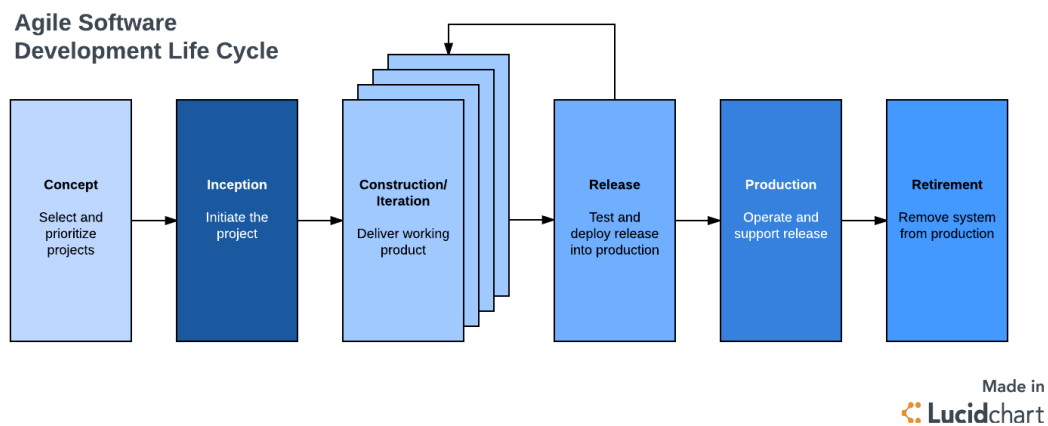


Figure 1.1 The Agile Software Development Life Cycle Overview

1.5.1 Phase 1: Concept

The concept phase is the phase where the objectives, outcomes and justification for “DysleRead” are planned. It is also known as the pre-planning phase. In this phase, the