

**UNIVERSITI TEKNOLOGI MARA**

**MODEL OF PERSONALISED USER  
INTERFACE (UI) DESIGN FOR  
SLOW LEARNER CHILDREN WITH  
READING DIFFICULTIES**

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## ABSTRACT

This thesis discusses the importance of personalising User Interface (UI) design for reading material to cater to children with reading difficulties. Personalisation has been identified as the best approach to support the implementation of considering students' abilities and needs in learning, particularly in education. However, a recent literature review has revealed a lack of personalisation approach, particularly in the aspect of profiling, as well as the lack of specific interface design guidelines dedicated to the development of reading material for children with reading difficulties. To address these gaps, this research aimed to provide insight into child profiling and how a personalised UI design for children model should be presented. The proposed ReadUINeed model covers a wider spectrum of learning, including the principles of Human-Computer Interaction (HCI), education principles, and several important theories related to engagement and motivation for a better experience in reading. The research proposed a theory-driven personalised UI design model that aims to personalize the design of reading material for children with reading difficulties. The first objective of this research was to profile the characteristics of children with reading difficulties which aided in developing personalized reading material. The second objective was to model the personalisation of UI design for children with reading difficulties, using the ReadUINeed model. Finally, the third objective was to verify the model's completeness, practicability, and reliability by experts in education and HCI. The proposed model was verified based on completeness, practicability, and reliability. The verification of the ReadUINeed model using Fuzzy Delphi Method (FDM) shows that all experts have the consensus that the ReadUINeed model is found to fulfil the completeness, reliability and practicability to be used as a source of reference in user interface design. The research makes three key contributions: personalised profiles of children, the proposed personalised ReadUINeed model, and the verification of the model's completeness, reliability, and practicability. The contribution of the model includes interface design guidelines based on developed user profiles. Furthermore, the findings of this research make significant methodological, empirical, and practical contributions that will serve as a guideline for designers and teachers, particularly in the domains of human interaction design (HCI) and teaching and learning in education. The proposed model is expected to aid in providing personalised reading support for children with reading difficulties by taking into account each user's specific reading needs.

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# CHAPTER ONE

## INTRODUCTION

### 1.1 Introduction

Assume you're walking into a massive bookstore on a bright and sunny day, with plenty of books in front of you. As this is your first time, you walk slowly towards various sections of the bookshelves, picking up a few books that you like. However, the second time you enter the same bookstore, your experience is vastly different from the first. Surprisingly, it appears that the second time you enter the bookstore, all of the bookstore staff seem to know you well, greet you courteously, accompany you to your favourite section, and even recommend books, as if they had personally known you for a long time. So naturally, you had a really wonderful experience that day where everyone treated you as if you were a special person.

This vivid imagination of a wonderful experience is known as "personalisation", which is the process of analysing an individual's characteristics, interests, needs, and preferences and making a suggestion based on the information learned from experience in order to "communicate" directly with the user. Personalisation is defined as a digital learning environment that provides an effective and efficient approach to tailoring learning based on individual knowledge, experience, and interests, as well as being effective and efficient in supporting and promoting desired learning outcomes ( Shemshack, A., & Spector, J. M., 2020). Individuals' needs and prior experience are taken into account in personalisation, allowing everyone to reach their full potential. In essence, personalisation provides an experience tailored to each user as needed, such as their habits, needs, and preferences. In fact, the term "personalisation" is not new, having been widely discussed and applied in many areas of research, particularly in important disciplines where knowledge is transferred and applied, such as education, healthcare, fashion, e-commerce and security. Personalisation practises in the real world have seemed to provide a viable solution and cater to an individual's needs. Under the right conditions, such a solution can assist individuals in resolving problems, improving their work performance, or meeting their individual needs.