

“Growin’Up” a Mobile Application for Primary Students with Dyslexia to Improve Sinhala Language.

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Abstract—Learning disabilities are conditions that have a direct impact on the brain and currently lack a cure or identified medical treatments. Unfortunately, many cases of learning disabilities remain undiagnosed, particularly in underdeveloped countries like Sri Lanka, due to a lack of awareness among parents and teachers. In response to this issue, the research project focuses on developing the “Growin’Up” mobile application as a solution to improve Sinhala language skills for primary students with dyslexia. The study encompasses four main components. Firstly, it analyzes the sequential difficulties faced by dyslexic students aged 6-8, with a particular focus on visual dyslexia. The goal is to identify the challenges and provide effective solutions to overcome them. Secondly, the effects of phonological dyslexia on letter learning, spelling, and sound comprehension are investigated. The study aims to propose strategies that address these learning difficulties. Additionally, the research identifies the number of learning difficulties experienced by dyslexic students and explores possible solutions to overcome them. This aspect of the study aims to improve numerical skills among dyslexic learners. Lastly, the research delves into rapid naming dyslexia and emphasizes the reading disabilities encountered by dyslexic students. By addressing these four critical aspects of dyslexia, the “Growin’Up” mobile application strives to provide a comprehensive tool to support primary students with dyslexia in enhancing their Sinhala language skills. The application aims to bridge the gap in learning opportunities for dyslexic students and improve their overall academic performance.

Index Terms—Learning disabilities, Dyslexia, Sinhala language skills, Visual dyslexia, Mobile application, Primary students

I. INTRODUCTION

Learning disabilities, characterized by difficulties in acquiring and processing information, pose significant challenges to individuals worldwide [1]. Among these disabilities, dyslexia stands out as a common condition affecting language-related skills, particularly in reading and spelling. Despite the prevalence of dyslexia, many cases, especially in underdeveloped countries like Sri Lanka, remain undiagnosed due to limited awareness among parents and teachers [2].

This lack of identification and support significantly hampers the educational progress and overall well-being of affected students. In response to this pressing issue, the present research project aims to develop the “Growin’Up” mobile application, focusing on improving Sinhala language skills for primary students with dyslexia. This introduction provides an overview of the research project, highlighting its four main components that collectively address various aspects of dyslexia. The first component delves into visual dyslexia, analyzing the sequential difficulties faced by dyslexic students aged 6-8, with a specific focus on visual dyslexia [3]. By understanding these challenges, the study seeks to develop effective solutions that can be incorporated into the “Growin’Up” mobile application. These solutions could involve interactive exercises, visual aids, and personalized learning approaches tailored to the needs of dyslexic students. By addressing visual dyslexia, the application aims to enhance reading comprehension, improve

word recognition, and facilitate smoother language processing.

The second component investigates phonological dyslexia and its effects on letter learning, spelling, and sound comprehension [4]. The research project seeks to investigate the effects of phonological dyslexia on primary students' Sinhala language skills. By identifying the specific learning difficulties related to phonological dyslexia, the study aims to propose

strategies within the "Growin'Up" mobile application that target these challenges directly. These strategies could include phonics-based exercises, auditory training, and multisensory learning techniques to reinforce sound-symbol associations, improve spelling, and enhance overall language proficiency. Additionally, the research project identifies and explores several learning difficulties experienced by dyslexic students [4]. By understanding the nature of these challenges, the study

seeks to develop solutions and interventions that can be integrated into the "Growin'Up" mobile application. These interventions could involve interactive games, visual representations, and step-by-step instructions to facilitate numerical

understanding and strengthen mathematical abilities among dyslexic learners. Lastly, the project focuses on rapid naming dyslexia, emphasizing the reading disabilities encountered by dyslexic students [5]. The "Growin'Up" mobile application aims to develop strategies that address these challenges effectively.

The application could incorporate exercises that improve rapid naming skills, enhance word recognition speed, and foster fluency in reading Sinhala text. By targeting rapid naming dyslexia, the application aims to boost reading abilities and overall language proficiency among primary students with dyslexia.

The "Growin'Up" mobile application aims to provide a comprehensive tool to support primary students with dyslexia in improving their Sinhala language skills. By addressing the sequential difficulties faced by dyslexic students, including visual dyslexia, phonological dyslexia, number learning difficulties, and rapid naming dyslexia, the application strives to bridge the gap in learning opportunities and enhance academic performance. By leveraging technology and incorporating evidence-based strategies [6], the "Growin'Up" application has the potential to empower dyslexic students, promote inclusive education, and facilitate their integration into the educational system. This research project, therefore, holds promise in improving the educational experiences and outcomes of primary students with dyslexia in Sri Lanka and similar contexts.

II. LITERATURE REVIEW

Learning disabilities, characterized by difficulties in acquiring and processing information, pose significant challenges to individuals worldwide. Among these disabilities, dyslexia stand out as a common condition affecting language-related skills, particularly in reading and spelling [1]. Despite the prevalence of dyslexia, many cases, especially in underdeveloped countries like Sri Lanka, remain undiagnosed due to limited awareness among parents and teachers [2]. This lack of identification and support significantly hampers the educational progress and overall well-being of affected students.

In response to this pressing issue, the present research project aims to develop the "Growin'Up" mobile application, focusing on improving Sinhala language skills for primary students with dyslexia.

Dyslexia encompasses various subtypes, each with its specific challenges. Visual dyslexia involves difficulties in visual perception and word recognition. Dyslexic students often struggle with letter and word recognition, impeding reading comprehension and language processing [7]. Interventions such as interactive exercises, visual aids, and personalized learning approaches have been proposed to address visual dyslexia. These interventions aim to improve reading abilities, enhance word recognition, and facilitate smoother language processing [8]. Phonological dyslexia affects sound-symbol associations, letter learning, spelling, and sound comprehension. Dyslexic students with phonological dyslexia face difficulties in acquiring phonics skills, which can hinder their reading and spelling abilities. Phonics-based exercises, auditory training, and multisensory learning techniques have been suggested as effective strategies to support students with phonological dyslexia. These strategies aim to strengthen sound-symbol associations, improve spelling proficiency, and enhance overall language skills [9].

In addition to language difficulties, dyslexic students may experience challenges in number learning. Dyslexia can impact mathematical abilities, including numerical understanding, calculation skills, and mathematical reasoning [10]. Dyslexic students often struggle with number recognition, sequencing, and mathematical problem-solving. Interventions involving interactive games, visual representations, and step-by-step instructions can support dyslexic students with number learning difficulties. Rapid naming dyslexia, characterized by difficulties in quickly recognizing and naming letters, words, or symbols, is another significant aspect of dyslexia. Dyslexic students with rapid naming dyslexia experience challenges in reading fluency and word recognition speed [11].

Strategies to address rapid naming dyslexia may include exercises that improve rapid naming skills, enhance word recognition speed, and foster reading fluency. Mobile applications have emerged as promising tools for supporting students with dyslexia. Technology-based interventions can provide personalized and interactive learning experiences, catering to the specific needs of dyslexic students. Mobile applications offer the advantage of accessibility and convenience, enabling students to engage in learning anytime and anywhere. These applications can incorporate evidence-based strategies, such as multisensory learning, visual aids, and interactive exercises, to address various aspects of dyslexia and promote language skill development. The "Growin'Up" mobile application, developed in the context of this research project, aims to provide comprehensive support to primary students with dyslexia in improving their Sinhala language skills.

By addressing the specific difficulties associated with visual dyslexia, phonological dyslexia, number learning difficulties, and rapid naming dyslexia, the application seeks to enhance reading comprehension, strengthen sound-symbol associations,

improve numerical understanding, and foster reading fluency. By leveraging technology and incorporating evidence-based strategies, the "Growin'Up" application holds promise in promoting inclusive education and improving the educational experiences and outcomes of dyslexic students in Sri Lanka and similar contexts.

III. METHODOLOGY

The "Growin'Up" mobile application system aims to address the risk of dyslexia and its impact on language learning in primary students. The application incorporates four major components for identifying and intervening in dyslexia-related difficulties: Sequential Dyslexia, Phonological Dyslexia, Number Learning Difficulties, and Rapid Naming Dyslexia.

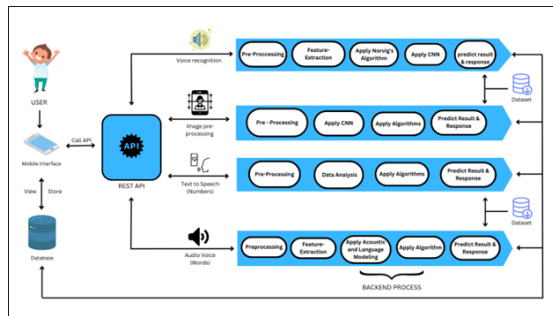


Fig. 1. Example of a figure caption.

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RESULT AND DISCUSSION

CONCLUSION

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