

## AN INTERACTIVE SPELLING LEARNING SYSTEM FOR DYSLEXIA KIDS

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### ABSTRACT

Dyslexia is a cognitive difficulty caused by a neurological problem. It's marked by problems with accurate and/or efficient language comprehension, as well as poor handwriting and word recognition. These challenges are usually caused by a phonological aspect of linguistic impairment, which is often overlooked in connection to other cognitive talents and successful classroom work. Although dyslexic youngsters generally display high intellect, the cognitive condition presents a unique obstacle to traditional classroom learning methods. As a result, early detection of the illness is critical in guaranteeing that parents and teachers give adequate support. The needs of the dyslexic children are different and need to be fulfilled to help them overcome this disability. The dyslexic kids do not lack intelligence on the contrary most of these kids are actually inherently more intelligent. Therefore, there is need to develop an effective tool to allow for the dyslexic children to be able to learn and memorize spellings easily. For this purpose, this research article outlines an effective and useful mechanism for the purpose of teaching dyslexic students spelling 4 letter words and improving their linguistic ability.

**Keywords:** Dyslexic Student Spelling System, Teaching Aid, Interactive System For Learning Disabilities.

### I. INTRODUCTION

Children with dyslexia frequently struggle with handwriting. Reading is thought to be a crucial feature of writing in certain cognitive theories of literacy development; thus, this is not unexpected. Dyslexic kids' writing challenges can be ascribed in addition to their reading struggles and express in a variety of different ways in their writings, including misspellings, readability, absence of diversified lexicon, poor conceptual design, and/or lack of organization.

Dyslexia and writing problems are linked for two main reasons. For starters, reading and comprehension are dependent on similar fundamental mechanisms. Dyslexia, for example, causes problems interpreting phonetic knowledge required for understanding the text, but writing necessitates storing phonological knowledge. Considering dyslexia affects the fundamental mechanism in both the reading and comprehension systems, it's not surprising that students with dyslexia have writing problems. Secondly, reading is a necessary ability for the process of writing.

Writers must often study reference material prior to actually composing their own text, as well as study and review their respective work to detect text issues such as language and grammatical faults, as well as disorganization. Reading challenges make this activity more challenging, particularly if children have weak handwriting abilities, which makes reading their own work much more challenging.

Proofreading is a critical skill for children's learning and development in primary school because it helps them to improve their concentration and awareness, both of which are necessary for comprehending and remembering. Furthermore, reading encourages thought and conversation in attempt to become critical thinkers competent of forming their own ideas as well as comprehending any subject, including arithmetic, disciplines such as sociology, and biological sciences.

Lately, primary schools have developed accessible programs to help students with learning disabilities including such dyslexia, dyspraxia, and developmental disabilities. This research is relevant to the exploration of dyslexia, which is a specialized name for a collection of characteristics in the text comprehension that comes within the broad spectrum of unique learning disabilities in reading. Dyslexia can cause problems with fundamental word recognition, comprehension skills, and written expression, and dyslexia frequently impacts all three elements. Someone with particular training can Provide dyslexia remediation using a hierarchically structured, multimodal methodology to reading instruction.

In principle, a dyslexic kid exhibits many reading difficulties, necessitating the usage of additional educational materials that are simple to use and master in order to improve reading comprehension. The word dyslexia have indeed been defined in a variety of ways, including as distinct from or comparable with a number of other

designations that refer to reading issues. This encompasses specialized reading challenges, reading disabilities, reading disabilities, learning disabilities, Unforeseen learning challenges and reading comprehension complexities. Nevertheless, an early childhood educator puts in a lot of time and dedication to create a teaching strategies and numerous modifications of educational materials in addition to teaching writing to a kid with dyslexia.

## II. METHODOLOGY

### Problem Statement

To provide assistance to the children suffering with dyslexia to achieve improved spelling a character recognition through the use of an interactive word puzzle devised using character shuffling on Swings Framework using java programming language.

### Motivation

The patients with dyslexia have been given a virtual tool to strengthen their linguistic abilities. It is a valid technological proposal because it has visual and audible feedback to improve concentration and the learning process. In this way, conventional exercises have been set aside, with the intention of providing greater understanding, confidence, and better experiences to the student. It should be clarified that the present work is a preliminary study that shows the development and application of video games with the use of Unity 3D software in a mixed set of children.

Being an approved system, there are different types of experimental result in each patient, and it depends on the reactions each of them presents. As a metric to determine the validity of this prototype, the SUS usability test was implemented, which has demonstrated that the interface presented to the user is easy to use, intuitive, and friendly since it is focused in evaluating infants. As an important remark, this research has been evaluated from the point of view of the acceptance generated by this system, but not by evaluating the approach of educational therapy, which is part of a broader investigation scope.

## III. MODELING AND ANALYSIS

The system overview diagram provides an overview of the system with the important modules in the form of blocks. At first the admin logs into the system and feeds the words and starts the Dyslexia Spelling system. The random words have their characters shuffled following that index position matching is achieved and the decision making is utilized for suggestion and results.

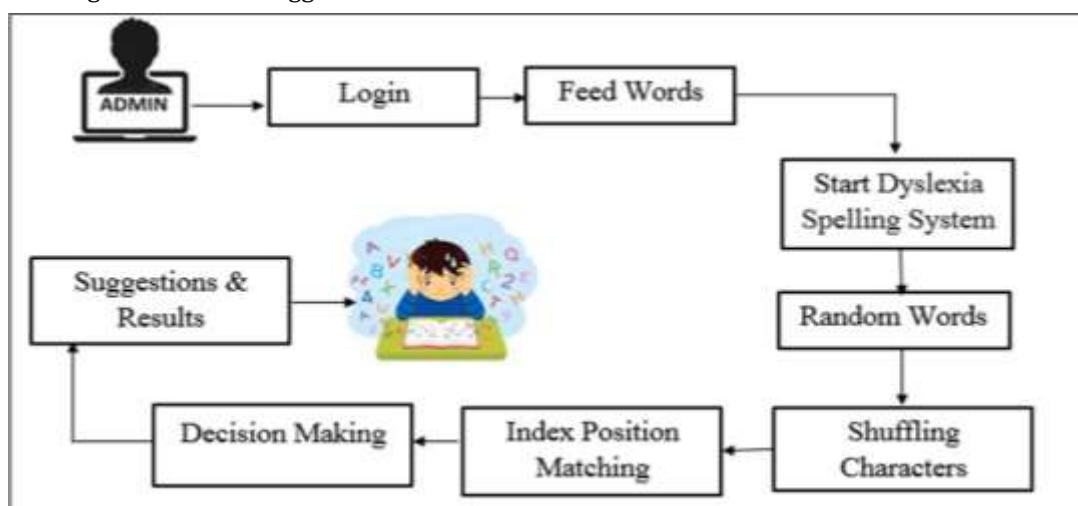


Figure 1: System Overview Design

### Algorithm (1 Random Word Selection and Shuffling)

```

//Input: Word List WL
//Output: Random Shuffled List RSL
getRandomShuffledWord(WL)
1: Start
  
```

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2: RSL =  $\emptyset$ 
3: for i=0 to size of WL
4: OWRD = WL[i]
5: TL[] = OWRD[j++] [TL = Temporary List]
6: STL[] = Shuffle(TL[]) [STL = Shuffled List]
7: SWRD = P(STL[] )
8: TMPL[0] = OWRD
9: TMPL[1] = SWRD
10: RSL = RSL + TMPL
11: end for
12: return RSL
13: Stop.
```

**Module Description:****1) Module A: Random Word**

- Word File
- Word Collection
- Random index
- Random word Generation

**2) Module B: Shuffling Characters**

- Random Word
- Random indices
- Character at random indices
- Shuffled characters

**3) Module C: Decision Making**

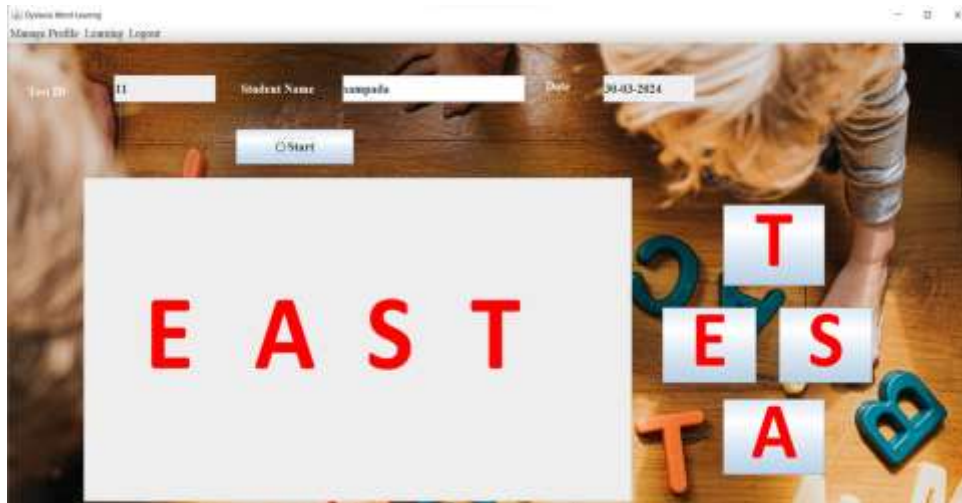
- Position index
- Character Assignment
- Flow maintenance
- Alert generation

#### IV. RESULTS AND DISCUSSION

We have successfully developed a Project on An Interactive Spelling Learning System for Dyslexia Kids. Proper input of the word list in workbook format. Effective shuffling of the words for the challenge. Successful evaluation of the spelling through Decision Making.



Figure 2:



**Figure 3:**

## V. CONCLUSION

The presented approach for the realization of the Dyslexia spelling system has been elaborated in this research article. Dyslexia is a neurological disorder that causes cognitive difficulties. It is characterized by difficulties with precise and/or effective language understanding, along with poor writing and word identification. These difficulties are commonly accompanied by a phonetic element of language disability, which is sometimes neglected in the context of other cognitive abilities and effective teaching performance. The main problem with dyslexic children is the fact that they need a lot more practice and getting familiar with words. This requires extensive teaching and the valuable time of the teacher which becomes difficult. Therefore, to strengthen the kid's vocabulary, this Dyslexia Spelling system allows for a much better practice for the kid. This approach has been designed to display 4 letter words which are shuffled to the kid who has to enter the letters in the proper order by tapping them. This improves the kid's vocabulary and allows for a much better practice improving the dyslexia symptoms.

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