

# Creation of Literacy Tasks for the Evaluation of a Literacy Intervention Program



DYSLEXIA ASSOCIATION  
OF SINGAPORE  
HELPING DYSLEXIC PEOPLE ACHIEVE



## Introduction

The Dyslexia Association of Singapore (DAS) provides literacy intervention for individuals diagnosed with dyslexia. Today, there are around 3000 children who receive literacy intervention at the DAS. It is important to monitor their progress as they receive intervention. Previously, the DAS used standardized literacy reading and spelling tests to do so, but this became challenging due to the size of DAS' student population.

In this study, the DAS attempted to implement a Curriculum Based Assessment (CBA) that could be used to track students' individual progress every 6 months. The CBA comprises various literacy tasks that encompass reading and spelling, with words selected based on the difficulty level determined from the scope and sequence of the DAS curriculum. These in turn will be used to track group performance of children over time and the overall effectiveness of the DAS' literacy intervention.

## Aims

- Identify words based on what is being taught in the DAS scope and sequence, with a view in mind to create parallel forms of the reading and spelling tests in future.
- Group selected words using theoretical linguistics rules (i.e., theoretical banding) and administer these words to normally achieving students so that their difficulty levels can be re-categorized (i.e., empirical banding).
- Determine if the empirically established word difficulty levels map onto the theoretical banding.

## Method

- 120 words were first identified based on the DAS scope and sequence. They were grouped into 3 levels of difficulty from lowest to highest, namely Bands A, B, and C.
- The words were then randomly split into 4 30-word lists, with equal numbers of Band A, B, and C words within each list.
- 3 Band A words were placed at the beginning of each list so participants will not be deterred by having to spell a challenging word right from the start. The order of the remaining words were randomized.
- 45 participants were recruited through convenience sampling from a local primary school. These comprised 19 Grade One students, 19 Grade Two students, and 7 Grade Three students.
- Researchers administered the words for students to spell in a group setting. They were assured that their performance will not affect their school grades but they had to try their best to spell the words. They were told to skip words that they were uncertain of.

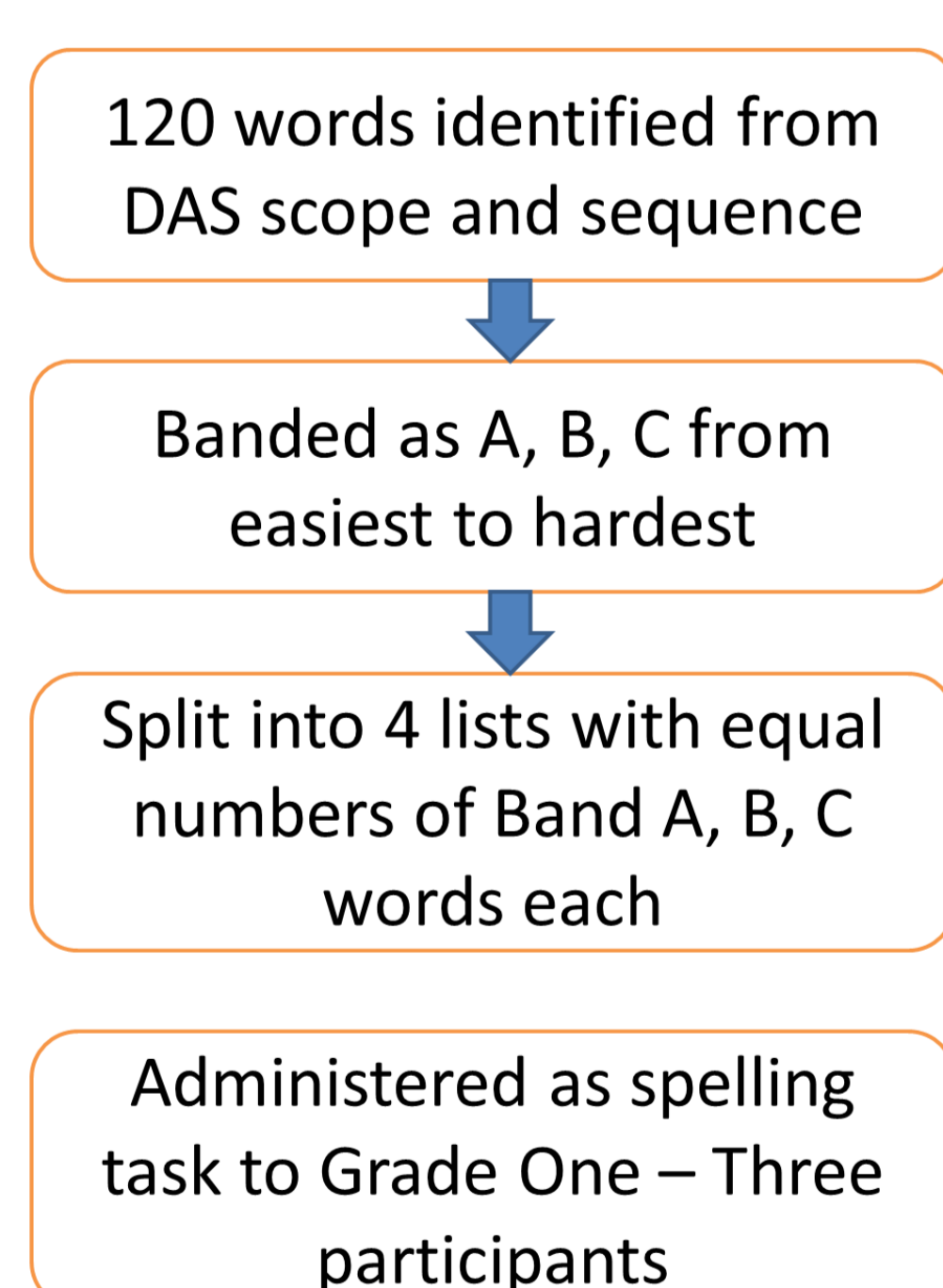


Figure 1. Method of the present study

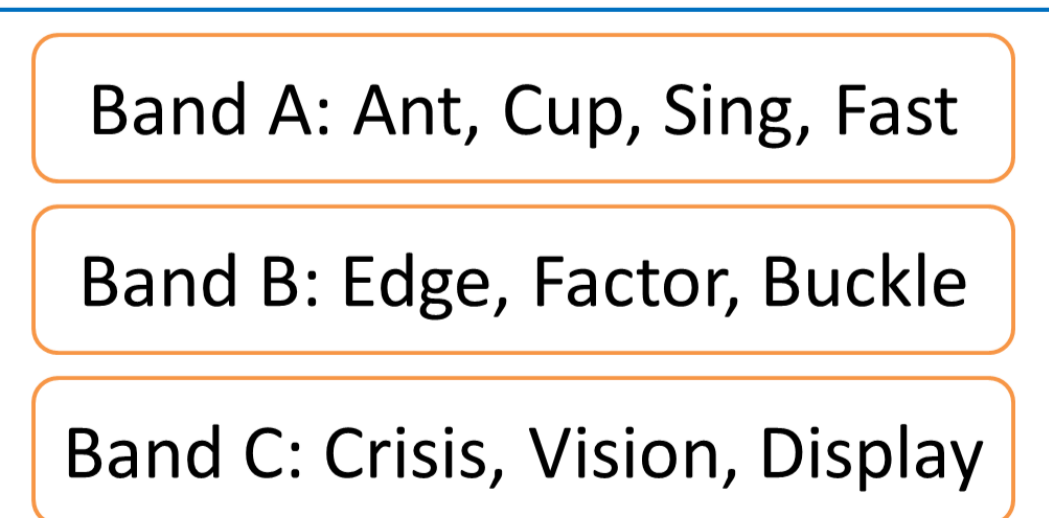


Figure 2. Examples of words in each band

## Results

### *Difference in Difficulty of Words across Bandings*

- Band C words were found to be the most difficult, followed by Band B and then Band A.

### *Difference in Performance across Grades*

- Grade One students had the lowest word average scores and average number of unattempted words, whereas Grade Two and Three students performed comparably in both aspects.

### *Fatigue Effect*

- There was a significant difference in the word average scores across the 4 lists,  $F(3, 123) = 12.93, p < .01$ . Post-hoc test using Tukey's HSD found that list 2 has the highest word average scores, followed by list 3, 1, and 4. This suggests that the decline in performance of the participants may be due to fatigue effect.

### *Percentage Match between Theoretical and Empirical Bandings*

- The match between the theoretical and empirical bandings was 50.8%.

### *Psycholinguistic Characteristics*

- A series of Pearson and Spearman correlations were computed to examine the possible psycholinguistic characteristics (i.e. Age of Acquisition, Concreteness, Familiarity, Imageability, Frequency, and Meaningfulness) that may affect word average scores. Most of them were found to have significant correlations, but their correlations were lower than that between the word average scores and the theoretical banding.

### *Relationship between Theoretical and Empirical Bandings*

- A chi-square test of independence was performed to examine if the mismatch between the theoretical and empirical bandings was due to measurement error or flaws in the theoretical banding. The relation between these variables was significant,  $\chi^2(1, N=59) = 12.20, p < .01$ . It was more likely for the words to differ by 1 banding (88.14%) than 2 bandings (11.86%). This suggests that the mismatch in the banding was most likely due to measurement error instead of an invalid theory.

## Discussion & Future Directions

- Words that differed by 2 bandings should not be included in future reading and spelling CBA tasks. The ratio of Band A to B to C words will be revised so that the CBA tasks will comprise more Band A words than Band B words than Band C words to minimize floor effects.
- Despite the low match between the theoretical and empirical bandings, the theoretical banding's higher correlation as compared to other psycholinguistic variables indicates that it is still useful for determining word difficulty. This finding provides support for the use of the DAS' scope and sequence to determine difficulty levels of words in its reading and spelling CBA tasks.
- The creation of these literacy tasks based on the DAS' scope and sequence is innovative and it is a useful tool for the DAS to use to track how students' respond to the intervention over time, thereby giving possible information regarding the effectiveness of its program.

## References

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- University of Western Australia (n.d.). *MRC Psycholinguistic Database*. Retrieved from [http://websites.psychology.uwa.edu.au/school/MRCDatabase/uwa\\_mrc.htm](http://websites.psychology.uwa.edu.au/school/MRCDatabase/uwa_mrc.htm)

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