

# Sound Box Mat: Improving the Word Recognition Level of Struggling Readers in Grade-1

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**Abstract:** This study aims to examine the effectiveness of the Sound Box Mat strategy in enhancing the word-recognition skills among struggling Grade 1 readers. It employed a pre-experimental design featuring a one-group pre-test and post-test. The sample consisted of ten students enrolled in an Elementary Laboratory School, located in Malaybalay City, Bukidnon, and who had been identified as struggling readers based on their performance in the Phil-IRI reading test. The Sound Box Mat strategy is a technique that aims to improve the word recognition abilities of struggling readers through the use of a mat divided into boxes, with each box representing a phoneme or sound, to help learners blend the sounds together to form a word. The results of the study showed a significant improvement in the learners' word recognition level after the intervention. The pre-test and post-test scores of the learners demonstrated a significant difference, indicating that the Sound Box Mat approach was effective in improving their reading abilities. These findings suggest that the Sound Box Mat strategy is a viable and practical technique for improving the reading skills of struggling grade 1 readers. The strategy can support the academic success of learners and enhance their reading abilities.)

**Keywords—**word recognition; struggling readers; reading interventions

## 1. INTRODUCTION

Reading is a fundamental skill that is essential for academic success and lifelong learning. It is the foundation for all other subjects and is considered a vital tool for communication, self-expression, and personal growth. The ability to read is crucial for success in school and is considered one of the most essential skills that an individual learner should acquire. It serves as a foundation for all areas of learning and is a prerequisite for understanding various subjects. Without good reading skills, learners may struggle in all subject areas as reading serves as a gateway for learning (Tomas, et al., 2021).

Reading is an essential skill that plays a significant role in a child's academic success and overall development. As Johnson (2017) suggests, reading involves not just decoding printed symbols but also understanding the meaning conveyed by the text. To achieve reading proficiency, the National Reading Panel has identified five critical elements that are necessary for effective reading instruction: phonemic awareness, phonics, vocabulary, comprehension, and fluency. Understanding these elements is crucial for parents and educators as they work with children to develop strong reading skills

The effects of poor reading skills had been a widespread problem that most teachers encountered in teaching even before the pandemic, especially at the primary level. According to Tamor (2017), students who have reading difficulties attributed to many devastating causes may be at

risk of academic, behavioral, social, and emotional difficulties. On the other hand, strong reading skills can have a positive impact on academic success and personal growth. Good readers are more likely to achieve high academic outcomes, have greater self-confidence, and experience greater success in their personal and professional lives (National Institute for Literacy, 2008)

The Philippines, as a developing country, still struggles to improve its education system, and the low literacy rate is one of the challenges the country faces. According to the 2018 Program for International Student Assessment (PISA) results, many learners struggle with basic reading skills. The Philippines ranked last out of 79 participating countries in reading comprehension, with an average score of 340, significantly below the global average of 487 (Department of Education, 2019). This underscores the urgent need to improve reading skills among learners in the Philippines, particularly in the early years of schooling.

Struggling readers are defined as learners who experience significant difficulties in acquiring and using reading skills (National Center for Learning Disabilities, 2019). Struggling readers face a range of challenges, including difficulty with phonemic awareness, decoding, fluency, and comprehension. There are several factors that contribute to poor reading skills, such as inadequate confidence levels of pupils, poor motivation given to pupils to stimulate their interest in reading, a lack of pre-reader books, low phonemic awareness skills of pupils, and inadequate teacher knowledge on teaching phonemic awareness skills, (Mohammed & Amponsah, 2018).

These learners require targeted intervention to help them acquire the basic reading skills they need to become proficient readers. To address this issue, researchers have turned their attention to the development of innovative and effective strategies for improving basic reading skills, focusing on word recognition levels. One such approach is the sound box mat. This approach involves the use of laminated sound boxes, which are a visual aid that helps the learners segment and blend sounds in words. In this approach, the researcher will slowly pronounce the words, and the learners will write the corresponding letters to each phoneme heard in the box. This strategy will enhance phonemic awareness and decoding skills among struggling readers.

This study endeavors to investigate the efficacy of the Sound Box Mat Approach in enhancing the word recognition proficiency of Grade 1 struggling readers. More precisely, it seeks to assess the influence of this approach on students' phonological awareness, phonemic awareness, and decoding abilities. The research is driven by the imperative to enhance reading instruction for Grade 1 students and to explore the potential of the Sound Box Mat Approach as a valuable resource for catering to the specific needs of struggling readers.

#### *Research Questions:*

This study aims to improve the reading abilities of struggling readers and reduce the percentage of struggling readers of Grade 1 learners of BukSu Elementary School Laboratory through Sound Box Mat approach. Specifically, it seeks to answer the following questions:

- 1.) What is the word recognition level of grade 1 learner's after the Sound Box Mat approach is used?
- 2.) Is there a significant difference between the pretest and post test scores in word recognition of the learners?

## **2. METHODS**

This part includes the research design, the respondents, the data collection method, and the data analysis techniques.

#### *Research Design*

The researchers employed a pre-experimental design using a one-group pre-test and post test to assess the reading performance of Grade 1 learners. A single case is observed at two time points, one before the treatment and one after the treatment. Changes in the outcome of interest are presumed to be the result of the intervention or treatment. No control or comparison group is employed. Since the researchers aimed to investigate the efficacy of the Sound Box Mat Approach in enhancing the word recognition proficiency of one group of

Grade 1 struggling readers, the design is deemed suitable for the study.

#### *Participants and Locale*

The sample for this study was purposefully selected from an Elementary School Laboratory, in a state university in Bukidnon, focusing specifically on students who are struggling in reading, as indicated by their performance on an oral reading test administered during the program. Located on Fortich Street in Malaybalay City, Bukidnon, the research locale is a comprehensive educational institution offering primary, secondary, and tertiary education. The participants in this research comprised grade 1 struggling readers. This group consisted of 10 learners, with 4 males and 6 females identified as struggling readers within this educational context.

#### *Research Instruments*

The research instrument, specifically the pre-test and post-test employed by the researchers for data collection was a standardized reading assessment tool specifically tailored to each participant's reading proficiency level, aimed at determining their Reading Level (RL). This assessment utilized the Phil IRI reading test, which employed a predetermined set of criteria to ascertain the individual reading level of each learner for every passage administered.

#### *Intervention & Strategy*

Reading serves as a doorway for acquiring academic abilities in various fields of study, and it plays a crucial role in unlocking multiple opportunities for success. However, if a child is unable to read proficiently by the third grade, they will likely encounter difficulty comprehending the subject presented in their other courses (Domingue, 2021).

Prior to the pandemic, many schools and educators had been concerned about reading proficiency. This problem is exacerbated by the challenges of distance learning. To address this issue, researchers have proposed an intervention using the Sound Box Mat strategy to improve the reading abilities of struggling readers.

The Sound Box Mat approach involves providing learners with reading materials composed of words to be read first. After reading, the researcher will distribute a laminated boxes to each learner, and started to pronounce each word slowly, stretching out each sound. The learners will then write the letter corresponding to each phoneme heard in a box and after that we ask the learners to blend the sounds together to form a complete word. The study employ four strategies, starting with simple CVC words and progressing to more complex CCVC words, CCVC with digraphs and CVCe words.

#### *Data Collection and Analysis*

In this study, a two-phase assessment approach was used to assess the efficacy of the sound box mat strategy as a reading

intervention. First, prior to implementing the intervention, a pre-test was given to assess the learners' word recognition skills, with the goal of establishing a baseline understanding of their reading abilities.

Following the implementation of the sound box mat strategy, a post-test was conducted to assess the impact of the strategy on the learners' reading abilities. Data from both the pre-test and post-test were collected, collated, and evaluated using a percentage-based analysis to discover changes in the participants' word reading levels.

To determine the significance of any differences observed before and after the treatment, a paired t-test was utilized. This statistical test allowed for an assessment of whether the intervention had a statistically significant impact on the participants' reading skills."

*Research Ethics Considerations*

Throughout the study, the researchers upheld rigorous ethical standards. Prior to involving anyone in the study, the researchers diligently secured assent forms from all participants below the age of 18. These assent forms were carefully designed to be age-appropriate and included explanations of the study's objectives and procedures in language understandable to the participants. Additionally, we obtained informed consent from their parents or legal guardians in accordance with regulatory requirements." Consent from various parties, including the school principal of BukSu Elementary Laboratory School, the adviser of the Grade 1 learners were also obtained. Informed consent and assent forms involved explaining the study's purpose, procedures, potential risks and benefits, and allowing participants to make an informed decision about whether or not to participate. The researchers also ensured that the participants' personal information remained confidential and was not shared with anyone not authorized to access it. This measure helped to protect participants' privacy and prevent potential harm or discrimination resulting from the release of their personal information. Throughout the study, the researchers respected the autonomy and dignity of participants, avoiding any forms of exploitation, manipulation, or coercion, and treating participants with respect and sensitivity.

**3. RESULTS AND DISCUSSION**

The following were the findings revealed in the implementation of the action research. Ten (10) learners in Grade 1 belonging to the frustration level of recognition were covered by the study. Five tables on oral reading tests were presented, evaluated, analyzed and interpreted: 1. Phil-IRI Pre-Test, 2. Common Reading Miscues, 3. Phil-IRI Post Test, 4. Phil-IRI, Common Reading Miscues, and 5. Paired t-test showing significant difference between the Pre Test and Post Test of the learners who exposed to Sound Box Mat strategy.

**The Word Recognition Level of Grade 1 Learners Before and After the Sound Box Mat Intervention**

*1. Phil-IRI Oral Reading Test (Pre Test)*

Based on the results presented in Table 1, it can be concluded that a significant number of Grade 1 learners are struggling with word recognition. Out of the 17 learners tested, only 4 or 23.53% were able to read independently, while the majority of learners, 58.82%, were found to be at the frustration level, meaning, they require extensive support and intervention to improve their reading skills. According to Melancov, et al. (2021), the primary deficit that underpins reading difficulties in all languages lies in problems with phonological awareness. Students who have better developed phonological skills are better at reading fluency, as well as reading comprehension. This can be explained by the fact that syllable awareness, sound segmenting and initial phonological awareness, elements of phonological awareness, are important for the pre-reading period .

**Table 1: Phil-IRI Oral Reading Test Results (Pretest)**

<b>WORD RECOGNITION LEVEL</b>	<b>No. of Learners</b>	<b>%</b>
Independent	4	23.53
Instructional	3	17.65
Frustration	10	58.82
<b>TOTAL</b>	<b>17</b>	<b>100%</b>

Phonological awareness is one of the most influential variables in the acquisition of reading skills. Therefore, it is crucial to stimulate phonological awareness during the pre-school age to support the development of reading abilities and to prevent learning disabilities (Veríssimo, et al. 2021). There are several factors that contribute to poor reading skills, such inadequate confidence level of pupils, poor motivation given to pupils to stimulate their interest in reading, lack of pre-reader books, low phonemic awareness skills of pupils, and teacher inadequate knowledge on teaching phonemic awareness skills, (Mohammed & Amponsah, 2018). These factors can affect a student's ability to decode and comprehend written text. The results of this study have significant implications for educators and parents, as reading skills are critical for academic success.

*2. Common Reading Miscues of Grade 1 Under Frustration Level of Word Recognition*

Different types of miscues in word recognition were also identified in order to group the students under frustration level with common errors. Their common miscues were mispronunciation, omission, substitution, insertion, transposition and reversal.

The table below shows the results of the common miscues of all the frustration readers. It shows that mispronunciation is the common miscue of all (100%) the struggling readers in Grade 1. Majority of them makes substitution (70%), while six or (60%) of them are making repetition. Three (30%) of them are making omission, two (20%) of them are making reversal. The least (10%) are making insertion and transposition.

**Table 2:** Common Miscues among Frustration Readers in Grade

COMMON MISCUES	No. of Pupils	%
Mispronunciation	10	100%
Substitution	7	70%
Omission	3	30%
Insertion	1	10%
Repetition	6	60%
Transposition	1	10%
Reversal	2	20%

Mispronunciation receives the highest percentage of learners who commits this reading miscue. Rutherford (1975) states in his study that there are some aspects that cause difficulty in the reading and pronunciation of English. The causes are the lack of one to one correspondence between speech sounds and letters. Some of the letters of English alphabet can represent more than one sound such as /t/ in "city", the differences between lax and tense vowels and errors should be identified and described to understand the process of reading. These reasons for mispronunciation and other reading miscues must given intervention to help these learners who struggle in their reading skills.

3. *Phil-IRI Oral Reading Test Results (Post Test)*

The results presented suggest that the implementation of the Sound Box Mat strategy intervention program in reading has had a significant positive impact on the word recognition skills of struggling readers in Grade 1. The final Phil-IRI oral reading test conducted by the researcher shows that there was a decrease from 10 or 58.82% of learners under the frustration level of word recognition to none, indicating that all learners were able to progress to higher levels of recognition. Moreover, Table 3 shows that the majority of the learners (60%) advanced to the independent readers level, indicating that they can read accurately and fluently. The remaining learners (40%) progressed to the instructional readers level. As predicted, students who participated in the reading program improved their word recognition abilities. This findings are supported by study suggesting that sound box mat instructional reading is an evidence-based method for helping preschool to elementary

students acquire phonemic awareness, letter-sound correspondences, and spelling (Kelsey, Laurice 2019).

**Table 3:** Phil-IRI Oral Reading Test Results (Post Test)

COMMON MISCUES	No. of Pupils	%
Mispronunciation	10	100%
Substitution	7	70%
Omission	3	30%
Insertion	1	10%
Repetition	6	60%
Transposition	1	10%
Reversal	2	20%

The factors contributing to the increase in the performance level of struggling readers include the use of phonological awareness and word recognition skills. The results of this study have significant implications for educators and as they provide evidence that the Sound Box Mat intervention program can effectively improve the word recognition skills of struggling readers in Grade 1. This program could be incorporated into regular classroom instruction or used as a supplemental intervention for struggling readers. Furthermore, the findings of this study may also encourage schools to invest in research-based interventions to improve the literacy skills of struggling readers.

The table presented below (Table 4) displays the findings of a study on a common reading errors made by the learners who are under frustration while reading. Based on the results, the miscue of mispronunciation decreased in frequency from 10 to 4 among the learners, which indicates that they improved their recognition and pronunciation skills. The miscue of reversal also decreased in frequency from 2 to 1, suggesting that the students made fewer mistakes when reading words in reverse order. Repetition remained a persistent challenge for readers, with the same number of students experiencing this difficulty as in the initial assessment. Notably, the miscues of substitution, omission, repetition, and transposition were no longer present among the learners. It shows that they were able to overcome these common reading challenges. The results provide insight into the effectiveness of interventions aimed at improving reading skills of the Grade 1 learners.

**Table 4:** Common Miscues among Frustration Readers in Grade 1

COMMON MISCUES	No. of Pupils	%
Mispronunciation	4	40%
Substitution	0	0%
Omission	0	0%
Insertion	1	10%
Repetition	0	0%
Transposition	0	0%
Reversal	1	10%

This means that after the strategy used which is the Sound Box Mat approach, the readers who commits mispronunciation decreases. It is the approach where learners are ask to listen the sound, how it is read, and how it is pronounced that helped in the readers progress. This is supported by Baker (1980) which he stated that learning to read will be easier if the language is written as it sound.

### Comparison of the Level of Word Recognition of Grade 1 Learners

Table 5 presents the paired t-test results on the word recognition level of the 10 grade 1 learners after exposing them to Sound Box Mat Strategy. It revealed that learners post test result after four sessions of Sound Box Mat intervention has a mean of 48.3 which is higher compared to the mean of the learners pretest scores which is 43. The mean score was compared using the paired t-test for independent samples. The compared t-value which is 13.39 is higher than the critical value of -6.195, -4.405 at  $\alpha=0.05$  or 95% confidence level. Since the computed t-value is higher than the critical value, the results revealed that there is a significant difference in the word recognition level of learners who were under the four session of Sound Box Mat strategy.

**Table 5:** The Paired t-test of Significance Showing Significant Difference between the Pretest and Post Test Performance of Word Recognition Level of the Learners who exposed to Sound Box Mat Strategy.

Paired T for Pre test - Post	N		StDev	SE Mean
	Mean			
Pre test	10	43.000	2.309	0.730
Post	10	48.300	1.889	0.597
Difference	10	-5.300	1.252	0.396

95% CI for mean difference: (-6.195, -4.405)

T-Test of mean difference = 0 (vs  $\neq$  0): T-Value = -13.39 P-Value = 0.00

### 4.CONCLUSION

In conclusion, the study's findings demonstrate the effectiveness of the Sound Box Mat approach in enhancing the word recognition abilities of Grade 1 students facing reading difficulties. The results from the Phil-IRI oral reading

test reveal a substantial improvement in the learners' word recognition proficiency, with none of them remaining below the frustration level following the intervention program. These outcomes suggest that the Sound Box Mat approach has a positive impact on learners, helping them refine their word recognition and pronunciation skills, as evident from the reduced occurrences of mispronunciation and reversal miscues.

Moreover, the paired t-test indicates a significant difference in the word recognition levels between learners who participated in four sessions of the Sound Box Mat strategy and those who did not. These findings hold important implications for the development of effective interventions aimed at supporting struggling readers in achieving academic success. Educators can consider implementing the Sound Box Mat approach as an instructional strategy to enhance the reading abilities of Grade 1 students facing challenges, thereby fostering their reading success.

### 5.RECOMMENDATIONS

Based on the major findings and conclusion of the study, the researchers would like to recommend the following;

- Given the demonstrated effectiveness of the Sound Box Mat approach in teaching reading, educators are strongly encouraged to integrate this strategy into their classroom instruction to enhance the word recognition skills of struggling readers.
- It is crucial to regularly assess the progress of learners in order to gauge the impact of the intervention program. Administer pre- and post-tests to evaluate learners' advancements and make necessary adjustments to the intervention strategy.
- In order to address learners' reading difficulties, it is imperative to closely oversee and enhance their reading activities, both at home and as they progress to the next grade level. This should be tailored to individual reading abilities and the specific challenges that have been identified.
- Consider implementing the Sound Box Mat Approach in other classrooms and schools to improve the reading skills of more learners. Share the findings and success stories of the intervention program with other teachers and educators to encourage its adoption.

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