Parameter: Journal of Statistics
Available at https://bestjournal.untad.ac.id/index.php/parameter
Vol. 5 No. 1 2025, 1 - 12
DOI: *https://doi.org/10.22487/27765660.2025.v5.i1.17483*
eISSN: 2776-5660

FRIEDMAN'S ANALYSIS OF THE READING LITERACY PROGRAM IN IMPROVING STUDENT'S READING SKILLS

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ABSTRACT

The School Literacy Movement (GLS) is an effort to cultivate character through reading activities and becomes the foundation of the learning process through the establishment of a school culture as a comfortable learning environment and leads to increased literacy skills in students. One of the GLS programs is the 15-minute reading program before learning begins which is implemented in education units. However, the GLS program has not been comprehensively based on the GLS guidelines from MoEC-Ristek. The intensity of GLS activities is still lacking because it's only done twice a week. Based on this fact, the researcher conducted a 15-minute reading program before learning begins four times a week. This study aims to evaluate the implementation of the reading literacy program in improving reading skills. The samples were 90 students of early grades I and II of MIN 3 Bandar Lampung. This study used Friedman and Effect Size analysis, with reading skills assessed based on early-grades indicators from the MBKM curriculum. This study found that there is a difference in the level of reading skills before and after the implementation of the 15-minute reading program before learning begins, in other words, the program has effectiveness in improving reading skills. The effectiveness is 0.731, indicating a moderate effectiveness level of 76% in enhancing early-grade reading skills.

Keywords: Effect Size, Friedman, Literacy, Reading

Cite: Pitri, R., & Alvionita, E. (2025). Friedman's analysis of the reading literacy program in improving student's reading skills. *Parameter: Journal of Statistics*, *5*(1), 1-12. https://doi.org/10.22487/27765660.2025.v5.i1.17483

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[*]Received: May 2025; Reviewed: May 2025; Published: Jul 2025

INTRODUCTION

Reading skills are one of the basic abilities that are very important to master, especially in the context of education (Dalman, 2021). This ability not only has an impact on understanding subject matter, but also becomes the main foundation in the learning process at various levels of education. The increasing complexity of reading material and the demand to understand information more critically encourage the need for efforts to develop more effective reading skills (Rahim, 2009). The School Literacy Movement (GLS) strengthens the cultivation of character as outlined in the Regulation of the Minister of Education and Culture Number 23 of 2015 (Sari, 2018). The GLS according to Permendikbud No. 23 of 2015 is an activity that can encourage all children in Indonesia to have an interest in reading books on their own which is expected over time to be able to become a culture in national life (Rahman & Haryanto, 2014).

As in the library of MIN 3 Bandar Lampung, it has implemented GLS based on GLS guidelines to students. The GLS program at MIN 3 Bandar Lampung is carried out with a variety of comprehensive activities such as 15 minutes of reading by choosing the reading material needed before the learning begins accompanied by each homeroom teacher, the activity is carried out twice a week. However, GLS in MIN 3 Bandar Lampung has not been comprehensively based on the GLS guidelines from the Ministry of Education and Culture-Ristek. The intensity of GLS activities at MIN 3 Bandar Lampung is still lacking because it is only carried out twice a week. Therefore, researchers conducted a 15-minute reading literacy program before learning began four times a week to see the differences before and after the implementation of the 15-minute reading literacy program before learning began.

Many studies related to the GLS program have been conducted, such as Heri Dermawan, et al (2023) entitled School Literacy Movement as a Solution to Increase Reading Interest in Elementary School Children, which states that the habituation stage of GLS is able to increase students' reading interest with reading activities for fifteen minutes before learning (Dermawan et al., 2023). This is also supported by Niwati's research (2020) entitled Implementation of the School Literacy Movement in Improving Reading and Writing Skills at MI Nurul Huda Bondowoso, which states that the implementation of the school literacy movement in improving reading and writing skills. However, both studies did not evaluate the GLS program on improving students' reading skills quantitatively.

The measurement of student's reading skills uses a grade, such as 1 to 4 which have meaning related to student's understanding of reading skill indicators. Reading skill assessment data has an ordinal scale. Based on the condition of the reading skill assessment data and the reading skill assessment carried out before and after the GLS program the Friedman analysis is good to handle that condition. Based on these facts, an analysis is needed to see the difference in students' reading skills before and after the implementation of four times a week in reading activities 15 minutes before learning begins, one of which uses Friedman analysis. The Friedman test is one of the non-parametric techniques used to analyze repeated data from several groups or treatments. In the context of reading skills research, this test can provide a more in-depth picture of the differences in reading skills observed in several different groups or conditions.

In addition, seeing the difference between reading score before and after the implementation of GLS program, it is necessary to measure the effectiveness of the reading literacy program activities 15 minutes before learning begins on improving reading skills. This is done to reinforce the results of the Friedman analysis, which is has difference between the treatment before and after implementation of GLS program that have a positive impact, namely providing effectiveness in improving student's reading skills. That effectiveness can be measured by effect size value. Effect size is a measure of the practical significance of research results in the form of a measure of the magnitude of correlation or difference, or the effect of a variable on another variable. This measure complements the analysis result information provided by the significance test. Information on effect size can also be used to compare the effects of a variable from studies that use different measurement scales (Santoso, 2017). Based on the exposure to the problems described above. Therefore, research was conducted related to Friedman's Analysis of the Reading Literacy Program in Improving Students' Reading Skills.

MATERIALS AND METHODS

Materials and Data

This study utilized data obtained through pretest and posttest tests of reading skills conducted on early grade students of MIN 3 Bandar Lampung. The data was collected by measuring students' reading skills before and after the 15-minute reading literacy program before learning begins. The object of this study was early grade students at MIN 3 Bandar Lampung, namely grades I and II. The selection of

early grades was because early grade students were in the transition period of students' basic learning, so that students' reading and writing skills were still basic. The population of this study was 116 early grade students 1 and 2 at MIN 3 Bandar Lampung. The sample used in this study consisted of 90 students. The sampling technique used was proportional random sampling. The proportion of samples for each class was adjusted to the proportion of the population for each class (Table 1).

Table 1. Number of Population and Samples

Number	Grade	Population	Proportion	Sample
1	I A	30	0.259	23
2	I B	28	0.241	22
3	II A	30	0.259	23
4	II B	28	0.241	22
Total		116		90

Each early grade is given a different learning method to measure their reading skills. The reading skills test scores are then analyzed to see the differences before and after the 15-minute reading program before learning begins. Early student reading skills are measured using the early grade reading skills indicator in the MBKM curriculum. The reading skill scores have a score range of 1 to 4. The reading skill indicators and score ranges in each reading skill indicator are as follows:

a. Spell the letters in words shown to him/her
   Description:
   1= Students only mention 1 letter shown to them
   2= Students only mention 2 letters shown to them
   3= Students only mention 3 letters shown to them
   4= The student can spell 4 (all) letters shown to him/her

a. Read syllables well
   Description:
   1= Students are only able to mention 1 syllable or have not been able to mention the syllables shown to them
   2= The student only mentions 2 syllables that are shown to him/her
   3= The student can mention 3 syllables shown to him/her
   4= The student can mention 4 (all) syllables shown to him/her

c. Able to read words of familiar words fluently
   Description:
   1= Students have not been able to read all the sentences in the question with the right intonation
   2= Students are only able to read 1 sentence in the question with less precise intonation
   3= Students are able to read 2 sentences in the question with fairly precise intonation 4
   4= Students are able to read 3 sentences or all in the question with very good intonation Exactly

d. Read the words learned in the student book fluently
   Description:
   1= Student can only read 1 sentence in the book fluently
   2= Students can only read 2 sentences in the book less fluently
   3= Students can read 3 sentences in the book quite fluently 4
   4= Students can read 4 or all sentences in the book very fluently

e. Understands the information from the picture he/she observed and explains it well
   Description:
   1= Students can only understand and recite 1 sentence in the picture they observe
   2= Students can only understand and recite 2 sentences in the picture they observe
   3= Students can understand and recite 3 sentences in the picture they observe
   4= Students can understand and read all the information from the picture they observe

Research Methods

This study applies a quantitative approach to assess before and after the 15-minute reading literacy program before learning begins. Before the assessment of students' reading skills was carried out, the student skills assessment instrument was tested for validity and reliability to find the level of validity

and reliability of the instrument in describing the reading skills measurement indicators. This validity test uses the results of the instrument test which will later be connected to the correlation test. The correlation value produced in equation (1) is a validity coefficient that has a value between -1.00 to +1.00. The greater the value of the validity coefficient, the better the instrument created. The correlation formula used to determine the validity coefficient as follows (Fraenkel, Wallen, & Hyun, 2012):

$$r_{xy} = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{[N\sum X^2 - (\sum X)^2][N\sum Y^2 - (\sum Y)^2]}} \quad (1)$$

Note:

r_{xy} :coeficient of correlation XY
N : number of respondents
$\sum X$: sum of value of questions
$\sum X^2$: sum square of number of value of questions
$\sum Y$: sum of total of questions
$\sum Y^2$: sum square of total of questions
$\sum XY$: sum of multiple between X and Y

Next, a reliability test is carried out, namely the accuracy of the instrument in assessing (Ratih Pratiwi, I. G. A., Manuaba, I. B. S., & Sujana, 2020). The reliability of the instrument is assessed using the Cronbach's Alpha coefficient as follows:

$$r_i = \frac{k}{(k-1)}\left\{1 - \frac{\sum s_i^2}{s_t^2}\right\} \quad (2)$$

Note:

r_i : reliability of instument
k : coefficient of Alpha Cronbach's
$\sum s_i^2$: sum of a questions
s_t^2 : variance of questions

Measurement of students reading skills is measured by giving a pretest and posttest after implementing a reading literacy program 15 minutes before learning begins. Pretest and posttest questions for reading skills using indicators and values as described in the data source. Then the resulting value with a range of 1 to 4 has been converted into a cognitive value with a range of 0-100, namely by using the formula (Ratnawulan & Rusdiana, 2015):

$$S = \frac{R}{N} \cdot 100 \quad (3)$$

Description:
S = Score
R = Number of scores in the answered item
N = Maximum score of the test

After being converted into cognitive scores, the *Friedman* Test and *Effect Size* analysis were conducted. The measurement of student's reading skills uses a grade, such as 1 to 4 which have meaning related to student's understanding of reading skill indicator. Reading skill assessment data has an ordinal scale. Based on the condition of the reading skill assessment data and the reading skill assessment carried out before and after the GLS program the Friedman analysis is good to handle that condition. The Friedman analysis is used in statistics to test a number (k) of paired samples, where the samples tested are more than two, with a minimum Ordinal data scale. Paired here can mean a combination, meaning that the treatment given is repetitive in every condition encountered in the field during the data collection process. The Friedman test is carried out using the SPSS version 30 using The Friedman Test formula is as follows (Suyatno & Ugiana Gio, 2017):

$$\chi^2 = \frac{12}{nk(k+1)}\sum_{i=1}^{k} \quad Ri^2 - 3b(k+1) \quad (4)$$

Description :
χ^2 : Friedman's Score
Ri : Number of Rank of the ith category/treatment
k : Number of category/treatments (i=1,2,3,……,k)
n : Number of pairs/groups

Criteria to do not rejected the Ho, if the probability (asymp sig)> 0.05 and H0 is rejected, if the probability (asymp sig) <0.05. the hypothesis that using in this research as follows:

H_0 : $\mu_d \neq \mu_{DO}$ (has no significant difference between student's reading skill before and after implementation the GLS)

H_1 : $\mu_d = \mu_{DO}$ (has significant difference between student's reading skill before and after implementation the GLS)

Effect size is the difference between two means (e.g treatment minus control) divided by the standard deviation of the two condition to calculate the *effect size* in the t test, the *Cohen's d* formula is used using the Excel application with the following formula (Thalheimer & Cook, 2002):

$$d = \frac{\overline{X_t} - \overline{X_c}}{S_{pooled}} \quad (5)$$

Description:
d = *Cohen's d effect size*
$\overline{X_t}$ = *Mean treatment condition*
$\overline{X_c}$ = *Mean control condition*
S_{pooled} = *Standard deviation*

The formula of S_{pooled} is as follows (son Hall, 2017):

$$S_{pooled} = \frac{SS_{within}}{df_{within}} = \sqrt{\frac{(n_1-1)S_1^2+(n_2-1)S_2^2}{n_1+n_2-2}} \quad (6)$$

Descriptions:
n_1 = *the number of participant treatment*
n_2 = *the number of participant control*
S_1 = *the standar deviation treatment*
S_2 = *the standar deviation control*

.

The explanation of the interpretation of Cohen's value criteria from equation (5) is explained in Table 2 (Becker, 2000).

Table 2. Interpretation of Cohen's value criteria

No	Cohen's Standart	Effect Size	Persentase (%)
1	Large	2,0	97,7
		1,9	97,1
		1,8	96,4
		1,7	95,5
		1,6	94,5
		1,5	93,3
		1,4	91,9
		1,3	90
		1,2	88
		1,1	86
		1,0	84
		0,9	82
		0,8	79
2	Medium	0,7	76
		0,6	73
		0,5	69

No	Cohen's Standart	Effect Size	Persentase (%)
3	Small	0,4	66
		0,3	62
		0,2	58
		0,1	54
		0,0	50

RESULTS AND DISCUSSION

Data Exploration

Measurement of students' reading skills in the early grades was carried out twice, namely before and after the implementation of the reading literacy program in grades 1 and 2 at MIN 3 Bandar Lampung. The measurement was carried out using a post-test and pre-test containing questions arranged based on reading skill indicators. For example, the indicator mentions letters in the words shown to students, students are given questions with the words "SUKA" and "KAMU". Then students mention the letters one by one from the word. Then, the researcher will assess according to the assessment criteria explained in the data source section. The pretest and posttest questions used in this study are explained in the following data description:

a. Spell the letters in words shown to him/her correctly

Students' reading skills related to being able to mention letters in words shown to them correctly are seen from the level of reading skills before and after the implementation of the reading literacy program 15 minutes before learning begins. Pretest and posttest were given questions with the words "SUKA" dan "KAMU".

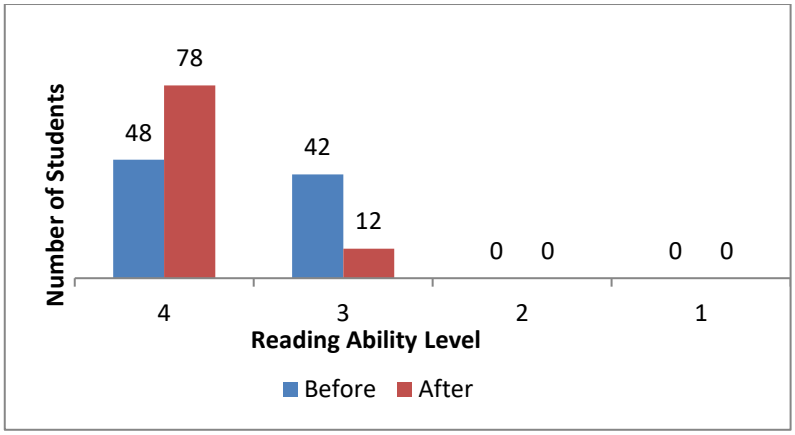

Figure 1. Students' Scores On The Indicator of Correctly Spelling Letters in Words Shown to Them

Figure 1 shows that there were 48 early grade students who were able to spell four letters from the given word. After implementing the 15-minute reading literacy program for a week in a row, there was an increase of 30 early grade students who were able to mention letters as a whole compared to the number before it was intensively implemented. The 30 students were students who could only pronounce two letters before the literacy program was implemented intensively. Based on this increase, it can be concluded that the 15-minute reading literacy program before learning begins can improve the reading skills of early grade students in terms of correctly spelling letters in words shown to them.

b. Read syllables well

Students' reading skills related to reading syllables well are seen from the level of reading skills before and after the implementation of the reading literacy program 15 minutes before learning begins. Pretest and posttest were given the same questions with the indicator of reading syllables.

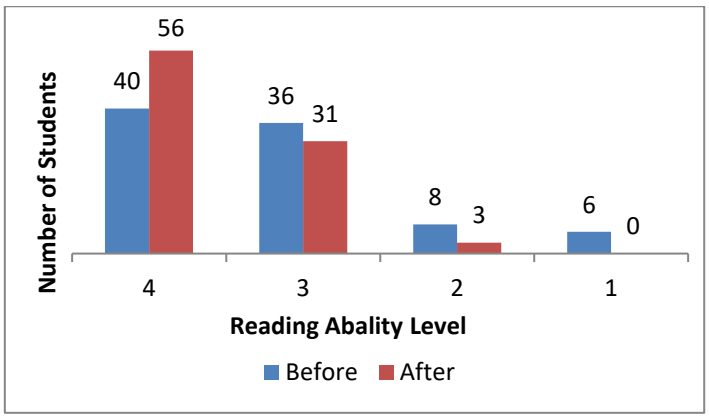

Figure 2. Students' Scores on The Indicator of Reading Syllables Well

Figure 2 shows that there were 40 early grade students who were able to read each syllable of PA-GI and BU-KU before the implementation of the reading literacy program. However, there were still 14 early grade students who were only able to read 1-2 syllables in the word. After the implementation of the school library literacy program, there was an increase in the ability of early grade students to read syllables well as seen from the reduction in the number of early grade students who were unable to read 1-2 syllables in the word, namely 11 students.

c. Able to read words of familiar words fluently

2. Bacalah kalimat di bawah dengan lancar!
   a. Aku suka makan keju.
   b. Jalan-jalan pagi menyehatkan tubuh.
   c. Pergi ke sekolah bersama teman

   Jawaban peserta didik_____

Figure 3. Question of Reading of Familiar Words Fluently

The reading skills of students in terms of being able to read words that they know everyday fluently can be seen from the level of reading skills before and after the implementation of the 15-minute reading literacy program before learning begins. The pretest and posttest were given the same questions (Figure 3).

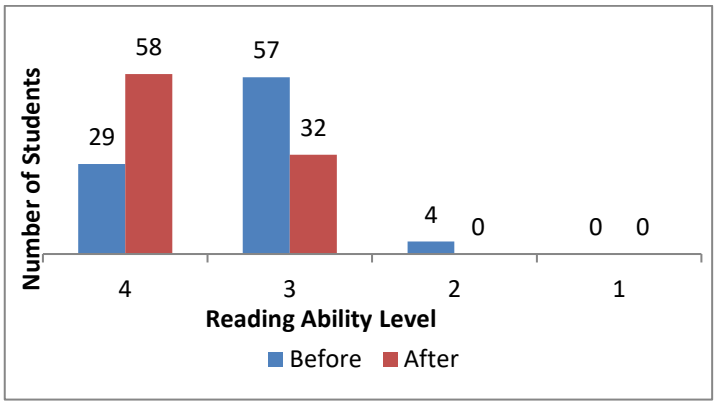

Figure 4. Students' Scores on The Indicator of Reading Familiar Words Fluently

Based on Figure 4, it shows that there were 29 early grade students who were able to read words they knew every day before the implementation of the 15-minute reading literacy program before learning began. After the implementation of the school library literacy program, it turns out that there is an increase in the ability of early grade students to read words they know every day fluently, it can be seen that the number of students has increased by 29 early grade students who are able to read the entire sentence in the question with very precise intonation. So, it can be concluded that the 15-minute reading literacy program before learning begins has effectiveness in improving the reading ability of early grade students in reading words they

know every day, this is evidenced by the increase in the number of students who are able to read the entire sentence in the question with very precise intonation by 29 students.

d. Read the words learned in the student book fluently
The reading skills of students related to reading the words studied in the student book fluently are seen from the level of reading skills before and after the implementation of the reading literacy program 15 minutes before learning begins. The pretest and posttest were given the same questions (Figure 5).

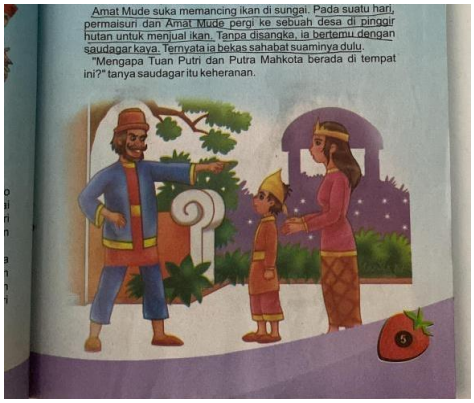

Figure 5. Question of Reading The Words Learned in The Student Book Fluently

Based on Figure 6, it shows that there are 59 early grade students who are able to read the entire sentence in the book provided very fluently. After the implementation of the school library literacy program, it turns out that the ability of early grade students to read the words studied in the student books provided is now increasing, seen by increasing the number of early grade students by 5 early grade students who can read the entire sentence in the book provided very fluently. So, it can be concluded that the 15-minute reading literacy program before learning begins has effectiveness in improving the ability of early grade students to read the words studied in the student book very fluently.

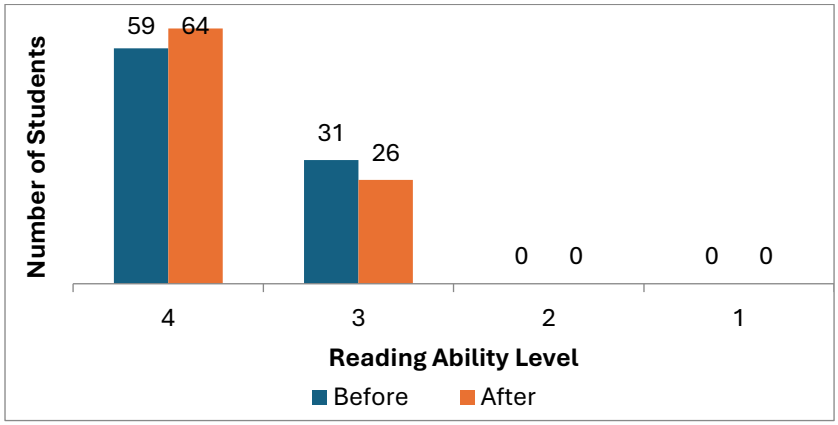

Figure 6. Students' Scores on The Indicator of Reading The Words Learned in The Student Book Fluently

e. Understanding the information from the picture that he/she observed and explains it well
The reading skills of students related to being able to understand information from the pictures they observe and explain it well can be seen from the level of reading skills before and after the implementation of the reading literacy program 15 minutes before learning begins. The pretest and posttest were given the same questions (Figure 7).

4. Bacalah teks tentang sapi berikut ini

Sapi adalah hewan ternak berkaki empat dan memakan rumput. Manusia bisa memanfaatkan daging dan susunya.

Buah jeruk berwarna kuning. Mengandung vitamin C yang baik untuk tubuh kita. Rasa buah jeruk ada yang manis dan juga asam.

Jawaban peserta didik_____

Figure 7. Question of Read The Information from The Picture and Explain It Well

Based on Figure 8, it shows that there are 37 students who can understand and read three sentences in the picture they observe and explain it well. After implementing the 15-minute reading literacy program before learning begins, there is an increase in the ability to understand information from the pictures observed by early grade students at MIN 3 Bandar Lampung where there is an increase of 8 students who can understand and read all information from the pictures they observe very well. So, it can be concluded that the 15-minute reading literacy program before learning begins has effectiveness in improving the ability of early grade students to understand information from the pictures they observe and explain it well.

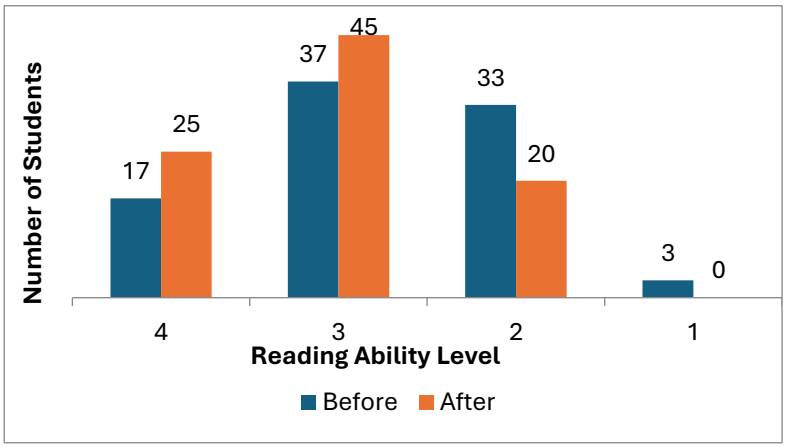

Figure 8. Score of Students Reading Information from The Picture They Observed and Explaining It Well

f. Able to understand information from imaginative narrative reading

The reading skills of students related to being able to understand information from imaginative narrative reading are seen from the level of reading skills before and after the implementation of the 15-minute reading literacy program before learning begins. Pretest and post-test were given the same questions (Figure 9).

5. Bacalah cerita di bawah ini!

Keinginanku

Aku ingin punya mainan baru.
Kereta mannan seperti punya Beni.
Aku memnta kepada ibu.
Kata Ibu, mainanku sudah banyak.
Mainanku masih bisa digunakan.
Kata ibu, sebaiknya aku membeli sepatu baru.
Sepatu lamaku sudah kekecilan.
Aku menuruti nasihat ibu.
Jawaban peserta didik_____

Figure 9. Reading Question for Imaginative Narrative Texts

Based on Figure 10, it shows that there are 46 students who can recite 2 to 4 sentences or poems and 38 students who can recite 5 to 7 sentences or poems. After the implementation of the 15- minute reading literacy program before learning begins there is an increase in the reading ability of early grade students of Min 3 Bandar Lampung, there is an increase of 7 early grade students who can recite 5 to 7 sentences or poems. So, it can be concluded that the 15-minute reading literacy program before learning begins has effectiveness in improving the ability of early grade students to understand information from imaginative narrative reading. However, there are still no early grade students who are able to recite all sentences or children's poems very precisely.

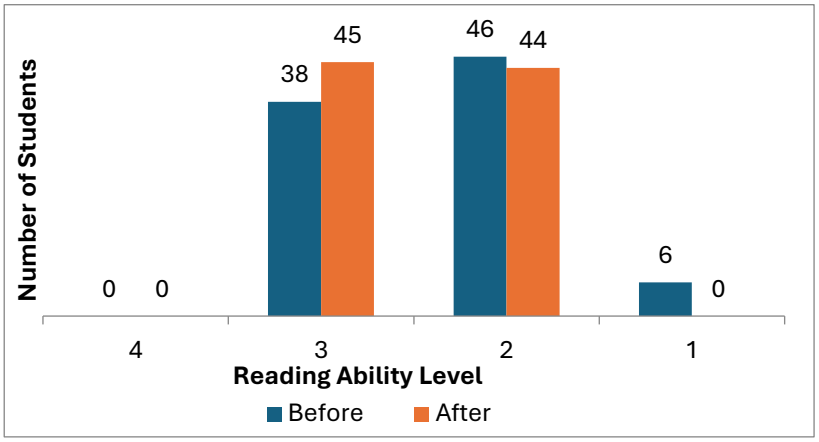

Figure 10. Student Score of Indicators for Imaginative Narrative Texts

Friedman Analysis

Friedman analysis was conducted to see the difference in the level of reading skills of early grade students before and after an intensive 15-minute reading literacy program for a week. Based on Table 1, the calculated Chi- Square value is 60,000 with a free degree of 1. This shows that the calculated Chi- Square value of 60,000 is greater than the Chi-Square (0.05; df: 1) value of 3,481. In addition, it is also reinforced by the results of a significant value of 0.000, which is smaller than the 5% significant level. Based on the results of the calculated Chi-Square value and the significant value, it supports rejecting H0, meaning that there is a difference in the level of reading skills of early grade students before and after the implementation of the 15-minute reading literacy program before learning begins.

Table 3. Friedman Test Output Reading Skills

Indicators	Value
Number of Samples	90
Chi-Square Value	60.00
Degree of Freedom	1
P-value	0.00

Effect Size

Based on Friedman's analysis, it shows that there is a difference in the level of reading skills of early grade students before and after the 15-minute reading literacy program before learning begins. So, it is concluded that there is effectiveness of the program in improving the reading skills of early grade students. The effectiveness of the school literacy program on the reading skills of early grade students using *effect size* with formula 3, the results are as follows:

$$d = \frac{82.61 - 77.72}{6.69} = 0.731 \approx 0.7$$

Based on the calculation results obtained, the effect size value is 0.731. Based on Table 2, 0.731 has meaning that the 15- minute reading literacy program provides 76% effectiveness on student reading skills at MIN 3 Bandar Lampung which is a medium category.

Result of Friedman's analysis and effect size is supported by descriptive of exploration data that shows the reading activities 15 minutes before learning begins which are carried out four times a week show an increase in early grade students in reading skills. This can be seen from the indicator of mentioning letters in words shown to him correctly before the literacy program as many as 48 students increased to 30 students, then the indicator of reading syllables well before the literacy program as many as 40 students increased to 56 students, then the indicator of being able to read words he knows every day fluently before the literacy program as many as 29 students increased to 58 students, then the indicator of reading words learned in student books fluently before the literacy program as many as 59 increased to 64 students, then the indicator of understanding information from the pictures they observed and explaining it well before the literacy program as many as 37 students increased to 45 students, then the indicator of being able to understand information from imaginative narrative reading before the literacy program as many as 38 students increased to 45 early grade students. Based on this, it can be concluded that the School Literacy Movement in reading activities 15 minutes before learning begins can improve the reading skills of early grade students.

CONCLUSION

Based on the results of research on the Friedman Analysis of the Reading Literacy Program in Improving Students' Reading Skills, resulted the significant value 0.000 is less than the alpha value 5%. It can be concluded that there is a difference in the level of reading skills before and after the 15-minute reading program is implemented before learning begins, in other words, the program has the effectiveness of improving reading skills. The effectiveness of the reading literacy program 15 minutes before learning begins on improving the reading skills of early grade students is 0.7 or equivalent to 76% effectiveness which is medium category.

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