227

OPEN ACCESS JOURNALS

Research Article

Empowering Students Disaster Literacy: An Effort to Decrease Disaster Risk towards Reading Aloud Strategy

Rahayu Prasetyaningsih[1], A. Mappewali[1]*, Andi Naniwarsih[3],
[1] English Education Department, Teacher Training and Education Faculty, Universitas Muhammadiyah Palu, Palu, Indonesia

ABSTRACT

This study aimed to prove whether the Reading Aloud Strategy can empower the disaster literacy of Al-Khairaat II Junior High School students. This research design is pre-experimental, in which researchers use one pretest-posttest group. The characteristic of this design is that it can only have pre-test and post-test groups without a control group. The sample of this study was students of class VIIIB of Al-Khairaat II Junior High School, Palu, a total of twenty people. The results of the data analysis showed that the alternative hypothesis is accepted, proving that the mean value of the post-test is greater than the mean value of the pre-test. In addition, the t_count value (4.7) is higher than the t_table value (2.024) with a significance level of 0.05 and (20-1) degrees of freedom (df). It is proven that the Reading Aloud strategy can improve the disaster literacy reading skills of students in class VIIIB of SMP Al-Khairaat II Palu.

Corresponding Author:

A. Mappewali
English Education Department, Teacher Training and Education Faculty, Universitas Muhammadiyah Palu, Palu, Indonesia
Email: andywalymasohi@gmail.com

1. INTRODUCTION

Indonesia is located at the intersection of tectonic plates and active mountain ranges and is a tropical climate region (Juhadi & Herlina, t.t.). Moreover, this situation makes some areas vulnerable to natural disasters.

Palu, the capital city of Central Sulawesi Province, is potentially prone to natural disasters, especially earthquakes. There is a fault in the earth's crust (fault) with a large enough dimension known as the Palu-Koro Fault.

Furthermore, this condition causes Palu City to be one of the earthquake-prone areas. On Friday, September 28, 2018, at 18:02, WITA, Palu was shaken by a magnitude 7.4 earthquake. It caused a large wave or tsunami and liquefaction, and landslide phenomena in several sub-districts in Palu City. The earthquake, tsunami, landslide, and liquefaction occurred in Palu City, the earthquake and liquefaction occurred in Sigi Regency, and the earthquake and tsunami occurred in Donggala Regency. Then the three areas are commonly known to its society with the abbreviation PaSiGala (Palu, Sigi, Donggala).

It is undeniable that almost every disaster that occurs always takes a lot of casualties, as well as property, which has direct implications for the lives of the disaster victims. The level of public understanding related to the problem of natural disasters is still deficient, which is one of the causes of the high death rate due to natural disasters in Indonesia. On the other hand, according to (Permana dkk., 2017), existing disaster education programs have yet to apply thoroughly in all aspects of society and institutions.

Therefore, community support is needed in the form of participation to reduce disaster risk through empowering disaster-related literacy. With this empowerment, a disaster resilience community is expected to be formed, which can increase its ability to deal with disasters and be more skilled, agile, and trained in helping itself when a disaster occurs. (*Pendidikan Keaksaraan Dasar Literasi Mitigasi Bencana*, t.t.).

On a smaller scale, disaster preparedness is also necessary to provide knowledge for students, especially at the junior high school level. Disaster literacy is delivered by using methods or strategies that are expected to empower students to deal with disasters in a fun way.

1.1. Disaster Literacy

Initially, the term literacy was interpreted as 'literacy,' which was then interpreted as 'literacy' or 'understanding.' Furthermore, according to (Abidin, 2015), multiliteracy is the ability to express and understand ideas and information in different ways using traditional and innovative forms of text, symbols, and multimedia, particularly in mitigation, preparedness, response, and recovery from disasters.

Seeing the conditions in Indonesia, where the risk of disaster is very high, disaster literacy to reduce disaster risk must be part of the world of education and learning. Thus, both students and the community can survive when a disaster occurs. Disaster literacy learning can be done by integrating 21st-century characters and skills so that it is expected to be a lifelong provision (Wiedarti & Indonesia. Direktorat Jenderal Pendidikan Dasar dan Menengah, t.t.). To develop competence, it can be obtained through learning activities at school. Since the school community has enormous potential as a source of knowledge, disseminator of disaster-related knowledge, and practical guidance, it plays an essential role in realizing or implementing disaster mitigation actions (Catur Pujianingsih dkk., 2019)

1.2. Reading Aloud Strategy

In line with some previous opinions related to literacy, (Frankel dkk. 2016) added that literacy is the ability to read, write, speak, calculate, and solve problems at a certain level that everyone must achieve. Therefore, by reading, students will be able to gain knowledge. In reading, readers tend to build a meaningful representation of a passage using several strategies which lead the readers to comprehend the text by getting information or messages from it more clearly (Prasetyaningsih, 2021).

Reading aloud is a strategy of reading stories to children aloud. Jim Trelease introduced this strategy in his book The Read-Aloud Handbook (Trelease, 2013)It is an effective reading method for children because it can adjust the child's brain to associate reading as a fun activity and create knowledge that becomes the basis for children and builds vocabulary (Pgsd, t.t.)

Furthermore, Reading Aloud is useful for improving pronunciation, helping to speak more naturally and confidently, and helping to understand the text better after reading the text silently (Müller, t.t.). Therefore, this method was chosen to empower students' disaster literacy to reduce disaster risk because this method is considered more effective and fun.

1.3. Disaster Risk Reduction through Reading Aloud Strategy

Students at the junior high school level can be apathetic about the situation and conditions around them if they do not have awareness and concern for disaster literacy. Meanwhile, their understanding of disaster is necessary to reduce the risk of disaster. Through disaster literacy, students are expected to be able to act quickly, actively and think critically in dealing with natural disasters. Disaster risk reduction is the concept and practice of reducing disaster risk through systematic efforts to analyze and reduce the factors that cause disasters (Juhadi & Herlina, t.t.) Providing disaster-related reading books is considered less effective because students tend to lack the willingness to do reading activities. Moreover, the book is a textbook related to describing a disaster and how to prevent it.

Based on these problems, researchers try to provide a strategy to make the reading process effective and fun. Reading Aloud was chosen to be applied in the reading process because, in previous research, Reading Aloud has been proven successful in elementary schools. It is assumed that Reading Aloud can be a favourable method to be applied in obtaining basic grades and early learning literacy (Marchessault & Larwin, 2013)

In this present study, the Reading Aloud Strategy was applied to junior high school students, namely at Al-Khairaat II Junior High School, particularly class 8B. Reading Aloud steps in this study used to empower students' disaster literacy to reduce disaster risk by making several changes, as follows:
1. Introduction to reading, researchers provide reading material and then inform students.

2. Reading picture books related to the disaster.

3. Simple discussions about the content of the reading are carried out interactively and communicatively.

These activities are expected to improve students' reading fluency and understanding related to disaster so that the main objective of this research is fulfilled, namely empowering students' disaster literacy as an effort to reduce disaster risk.

In previous research, The Read-Aloud Method to Develop Reading Literacy at the School's Educational Park (Rahayu & Mustadi, 2022) used reading materials in terms of fiction and non-fiction books. In addition, there is also research with the title The Use of Reading Aloud in Teaching Reading Comprehension (Sahara, Bahri & Erdiana, 2018), which uses the type of recount text as reading material in its research.

Meanwhile, in this study, the reading materials used are illustrated non-fiction reading books related to disasters using English. This type of illustrated reading book was chosen because the combination of narration and illustrations is contextually intact and meaningful systematically. Therefore, readers remain actively involved in discovering the meaning of unfamiliar words/concepts to understand themes and big ideas. In addition to learning disaster literacy, students also get new English vocabulary related to disaster and English vocabulary in general, which can also improve their English language skills simultaneously.

2. RESEARCH METHODS

2.1. Research Setting

The research was carried out at SMP Al-Khairaat II Palu. Researchers see that students have low disaster literacy, while Palu City is one of the areas on the island of Sulawesi with disaster-prone conditions. Empowering students' disaster literacy is considered important to do, to reduce disaster risk.

2.2. Research Design

The type of research is experimental research. According to Creswell & Guetterman (2018), experimental is testing an idea (or practice or procedure) to determine whether it affects the results or the dependent variable. In this study, two variables were used, variables X and Y. Variable X was the effect of using the Reading Aloud Strategy, and variable Y was students' understanding of disaster literacy.

Meanwhile, the research design was pre-experimental, in which the researchers used one pretest-posttest group. The characteristic of this design is that it can only have pretest and posttest groups without a control group. According to Creswell & Guetterman (2018) that the one-group pretest-posttest design usually involves three steps: (01) administering a pretest that measures the dependent variable; (02) applying X experimental treatment to the subject; (3) giving the posttest, once again measuring the dependent variable.

Research Design

One-Group Pretest-Posttest Design

Group A O1————X————O2

2.3. Data Collection Methods

At the first meeting, students were given (1) a pretest to determine their reading comprehension before applying reading aloud. Then students were given (2) treatments for 6 meetings. In the end, they were given (3) a posttest to measure students' understanding of disaster literacy after using the method.

The schedule of six meetings in the data collection process at SMP Al-Khairaat II Palu involves a pretest and posttest, as following:

Table 1. Data Collection Schedule

Meetings	Book Title	Publisher
Pre-test	Rocket's Earthquake Safety Activity Book	Bunni and Rick Benaron
1	Birdie and the Virus	The State of Queensland (Children's Health Queensland).
2	Learn about Natural Disaster. Tsunami	Obsidian Soft
3	Learn about Natural Disaster. Landslide.	Obsidian Soft
4	Prepare with Pedro (Disaster Preparedness Activity Book). Hurricane.	Federal Emergency Management Agency.
5	Prepare with Pedro (Disaster Preparedness Activity Book). Wildfire.	Federal Emergency Management Agency.
6	Prepare with Pedro (Disaster Preparedness Activity Book). Flood.	Federal Emergency Management Agency.
Post-test	Rocket's Earthquake Safety Activity Book	Bunni and Rick Benaron

The researchers collected the data by administering tests. A simple test measures a person's skills, knowledge, or performance in a particular domain Brown (2004:3). Researchers used two types of tests, namely pretest and posttest. The pretest was given before the treatment, and the posttest was given afterward.

Researchers used a type of multiple-choice test. Before taking the test, students read aloud by the researchers an illustrated text related to the disaster. Read on for a brief description of Earthquakes, the signs of an earthquake, and how to save yourself from an earthquake.

Considering that the aim of the research is to empower students' disaster literacy, in implementing the Reading Aloud Strategy, students are also asked to participate in a simple simulation to save them when an earthquake occurs. All readings and simulation instructions are given in English, although there is an English-Indonesian code mix for some terms to help students understand.

After the reading-aloud activity, students are given a type of multiple-choice test to measure students' understanding of the previous reading. Ten questions must be answered with answer choices a, b, c, and d.

2.4. Population and Sample

Sugiyono (2014:90) says, "Population is a generalization area consisting of objects/ subjects with certain qualities and characteristics set by researchers to study and draw conclusions. From some of the previous theories, it can be concluded that the population can be in the form of data, people, objects, and areas that meet the criteria for research. At SMP Al-Khairaat 2 Palu, there are two grade 8 (VIII) classes with a total population of 68 students. However, because the population to be used for research is quite large, it is impossible to study all of them with the available time, money, and human resources. In such circumstances, then the researchers conducted research on the sample.

Understanding the sample according to Ary (2014), a sample is a portion of a population. It can be concluded that research on the sample is only an approach to the population. This means there is always a risk of error in concluding the entire population.

Therefore, any research using samples will always try to minimize the risk of these errors, and this is related to how to take samples or the sampling technique used. Based on the population above, the researchers took samples using a purposive method. Hence, the samples selected were subjects who met the criteria in this study and were considered to have the appropriate age and level of understanding of the Reading Aloud Strategy was applied. The researchers took a sample from class 8 (VIII), namely 8B, with 34 students. However, when conducting data collection, only 20 students were present during the process.

2.5. Analysis Method

The research data were analyzed statistically, where the researchers analyzed the data from the test results. The researchers calculated the students' pretest and posttest scores, then calculated the students' average scores in both the pretest and posttest. Obtained from the formulation taken from Sudijono (2006:305),

$$Nilai\ individu\ siswa = \frac{nilai\ yang\ diperoleh}{Nilai\ maksimum} \ x \ 100$$

Next, the researchers calculated the average score of one experimental group. This is quoted from Best (2006) as follows:

$$X = \frac{\Sigma \chi}{N}$$

Where:
X   =   average value
$\Sigma \chi$ =   total score
N   =   Number of students

Then the researchers calculated the Mean Deviation (MD) taken from Sudijono, (2006:305). The average is formulated as follows:

$$MD = \frac{\Sigma d}{n}$$

Where: $MD =$ Mean Deviation between pretest and posttest
            $\Sigma d =$ Total deviation
            $n =$ Number of students

After calculating the average deviation of the pretest and posttest, the researchers calculated the sum of the squared deviations ($\sum x^2 d$) taken from Arikunto (2010:349). The formulation is as follows:

$$\sum x^2 d = \sum d^2 - \frac{(\sum d)^2}{n}$$

Where:

$\sum x^2 d =$ Sum of squared deviations

$\sum d^2 =$ Number of deviations

$n =$ Number of students

Finally, the researchers calculated the t_counted value using the following formula from Arikunto (2006:349). This technique was used to find significant differences in students' understanding of disaster literacy after being taught using the reading-aloud method. This aims to determine whether students' pretest and posttest scores significantly differ. It is formulated as follows:

$$t = \frac{Md}{\sqrt{\frac{\sum x^2 d}{n(n-1)}}}$$

Where:
t   = value of t_counted
Md   = mean of different pretest and posttest
$\sum x^2 d$ = total squared deviation
n   = sample subjects

3. RESULTS AND DISCUSSION

This study aimed to escalate students' disaster literacy by applying Reading Aloud Strategy. The researchers provided objective test which consists of 10 multiple-choice questions as an instrument to gather information from the students.

Before the treatment, the researchers conducted a pretest to gain information of students' basic knowledge particularly related to disaster literacy. Twenty students participated in the test and the result of the pretest is presented in the table below.

Table 2. Description of Students' Pre-Test Result

Initial	Correct Answers	Achieved Score
AG	5	50
AW	3	30
DST	5	50
MAG	4	40
AF	5	50
DS	5	50
TQ	4	40
MR	5	50
MK	8	80
ASF	4	40
RA	4	40
AGR	3	30
FA	7	70
SM	5	50
HA	4	40
AR	7	70
AS	6	60
MRO	6	60
MT	3	30
AM	4	40
Total		**970**

After obtaining each student's pre-test score, the researchers investigated the mean by applying the following formula:

$$M = \frac{\sum X}{n}$$

$$M = \frac{970}{20} = 48,5$$

It is obvious that in the pre-test, students' disaster literacy mean score is 48,5. It means their awareness of disaster still needs to improve as an effort to reduce disaster risk. Then, treatment was carried out in six meetings using Reading Aloud Strategy.

Posttest was distributed after a series of reading aloud activities to obtain the information whether students' basic knowledge increased or not.

Table 3. Description of Students' Post-Test Result

Initial	Correct Answers	Achieved Score
AG	8	80
AW	3	30
DST	6	60
MAG	7	70
AF	8	80
DS	7	70
TQ	6	60
MR	8	80
MK	5	50
ASF	4	40
RA	7	70
AGR	6	60
FA	8	80
SM	6	60
HA	5	50
AR	7	70
AS	8	80
MRO	8	80
MT	5	50
AM	7	70
Total		**1290**

As a comparison of students' mean result of pre-test and post-test, the calculation of mean was carried out with the following formula:

$$M = \frac{\sum X}{n}$$

$$M = \frac{1290}{20} = 64,5$$

Furthermore, the researchers counted the deviation (d) and squared deviation (d^2) of the pre-test and post-test score as seen below.

Tabel 4. Pre-Test and Post-Test Score

No.	Initial	Pre-Test Score	Post-Test Score	Deviation	Squared Deviation
1.	AG	50	80	30	900
2.	AW	30	30	0	0
3.	DST	50	60	10	100
4.	MAG	40	70	30	900
5.	AF	50	80	30	900
6.	DS	50	70	20	400
7.	TQ	40	60	20	400
8.	MR	50	80	30	900
9.	MK	80	50	-30	900
10.	ASF	40	40	0	0
11.	RA	40	70	30	900
12.	AGR	30	60	30	900
13.	FA	70	80	10	100

14.	SM	50	60	10	100
15.	HA	40	50	10	100
16.	AR	70	70	0	0
17.	AS	60	80	20	400
18.	MRO	60	80	20	400
19.	MT	30	50	20	400
20.	AM	40	70	30	900
Total				$\sum$ **320**	$\sum$ **9600**

The result of the tests indicates that there is a negative deviation in row number 9 initial MK. The post-test score (50) is lower than the pre-test score (80). Of the twenty students, there are sixteen students who obtained higher post-test than the pre-test scores, and three students did not experience improvement. It means that the pre-test and final test scores are the same. In conclusion, sixteen students experienced increased disaster literacy reading skills after applying the reading-aloud method, but four did not.

To calculate the mean deviation of the pre-test and post-test in the table above, the researchers used the following formula:

$$Md = \frac{\sum d}{n}$$
$$Md = \frac{320}{20} = 16$$

Then, the squared deviation score was counted by using the following formula:

$$\sum x^2 d = \sum d2 - \frac{(\sum d)^2}{n}$$
$$\sum x^2 d = 9600 - \frac{(320)^2}{20}$$
$$\sum x^2 d = 9600 - \frac{102.400}{20}$$
$$\sum x^2 d = 9600 - 5.120$$
$$\sum x^2 d = 4.480$$

The researchers then computed the t-count using the following formula to determine whether there is a significant difference between the student's pre-test and post-test results.

$$t = \frac{Md}{\sqrt{\frac{\sum x2d}{n(n-1)}}}$$
$$t = \frac{16}{\sqrt{\frac{4.480}{20(19)}}}$$
$$t = \frac{16}{\sqrt{\frac{4.480}{380}}}$$
$$t = \frac{16}{\sqrt{11.79}}$$
$$t = \frac{16}{3.43}$$
$$t = 4.7$$

Researchers have carried out testing procedures to determine whether the Reading Aloud Strategy can improve students' reading comprehension of disaster literacy. The hypothesis testing criteria are: if the t_count value is greater than the t_table value, then the alternative hypothesis is accepted. Meanwhile, the alternative hypothesis is rejected if the t_count value is smaller than the t_table value. After analyzing the data using the t_test formula, thr researchers presented a t_count value of 4,7. The difference is significant, although not high because the t_count value is greater than the t-table value. This is because there is one student who has a minus final test score. In addition, there were three students with constant scores between the pre-test and post-test.

To find out the significant difference from the t-test, the researcher compared the t-count (4.7) and t-table (2.024) values by examining 19 degrees of freedom (df) N-1=20-1 with a significance level of 0.05. It can be concluded that the t-count value is greater than the t-table value, so the alternative hypothesis of this study is accepted. In other words, it is proven that the application of Reading Aloud can be considered as an effective method in improving disaster literacy reading skills for class VIIIB students of SMP Al-Khairaat II Palu.

In applying the treatment, the researchers encountered several obstacles. However, they could be overcome, such as the classroom environment was still noisy, so the students' concentration was divided. This treatment requires extraordinary concentration of students in the application of reading aloud, so researchers must be in the content of reading materials on disasters developed and interesting so that students

are enthusiastic about taking classes. Therefore, every reader, researcher, and teacher who will apply this treatment can consider some of the problems that have been informed above. Teachers and lecturers need to overcome everything that might be an obstacle in applying the treatment to apply the Reading Aloud Strategy. Because students not only listen to the teacher telling stories by reading aloud, they also have to understand the story's contents. In addition, Reading Aloud can be applied to skills other than reading skills.

REFERENCES

Abidin, C. (2015). Communicative Intimacies: Influencers and Perceived Interconnectedness. *Ada: A Journal of Gender, New Media & Technology*, *8*, 1–16.

Arikunto, S. (2006). *Prosedur Penelitian suatu Pendekatan pada Pendekatan Praktek*. Rineka Cipta.

Ary, et al. (2014). Introduction to Research in Education (M. Kerr (ed.); 9th ed.). Cengage Learning.

Best, J. and K. J. (2006). Research in Education (A. E. Burvikovs (ed.); 10th ed.). Pearson Education Inc.

Brown, H. D. (2004). Language Testing Book: Principles and Classroom Practice. *Book*, 314.

Creswell, J. W., & Guetterman, T.(2018). Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research (6th ed.). Pearson.

Catur Pujianingsih, M. N., Wibowo, R. T., Indrianto, W. T., Purnamasari, I., Rozi, A. H., & Wulandari, D. A. (2019). *Analisis Kesiapsiagaan Komunitas Sekolah Muhammadiyah dalam Menghadapi Bencana Tanah Longsor di Kabupaten Karanganyar. Jurnal Geografi, Edukasi dan Lingkungan (JGEL)*, *3*(2), 100. https://doi.org/10.29405/jgel.v3i2.2950

Frankel, K. K., Becker, B. L. C., Rowe, M. W., & Pearson, P. D. (2016). From "What is Reading?" to What is Literacy.? Journal of Education, 196(3), 7–17. https://doi.org/10.1177/002205741619600303

Juhadi, P. :, & Herlina, M. (t.t.). *Pendidikan Literasi Mitigasi Bencana Di Sekolah.*

Marchessault, J. K., & Larwin, K. H. (2013). Structured Read-Aloud in Middle School: The Potential Impact on Reading Achievement. in Contemporary Issues in Education Research-Second Quarter (Vol. 6, Nomor 2). http://www.cluteinstitute.com/

Müller, A. (t.t.). Reading Aloud as a Teaching and Learning Tool.

Pendidikan Keaksaraan Dasar Literasi Mitigasi Bencana. (t.t.).

Permana, S. A., Liernoor, D., Slamet, A., & Juhadi, J. (2017). Community Rituals in Facing Volcanic Eruption Threat in Java. *KOMUNITAS:* International Journal of Indonesian Society and Culture, *9*(1), 29–36. https://doi.org/10.15294/komunitas.v9i1.7069

PGSD, D. (t.t.). *Penerapan Strategi Reading Aloud terhadap Materi Membaca Kelas 2 SDN 11 Kabupaten Kubu Raya.*

Prasetyaningsih, R. (2021). A Correlation Study Examining the Relationship between Metacognitive Knowledge and Reading Comprehension Ability. *Journal of Foreign Language and Educational Research*, *4*(2).

Sudijono, A. (2006). *Pengantar Statistik Pendidikan*. PT. Raja Grafindo Persada.

Sugiyono. (2014). *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif dan R&D.*

Trelease, Jim. (2013). The Read-Aloud Handbook (Seventh). Penguin Books.

Wiedarti, P., & Indonesia. Direktorat Jenderal Pendidikan Dasar dan Menengah. (t.t.). *Desain induk gerakan literasi sekolah.*