

Research / Review

# The Effect of Memory Game on Reading Comprehension Skill of Eighth Grade Students at UPTD SMP Negeri 3 Mandrehe

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**Abstract:** This study aims to examine the effect of using a memory game as a teaching medium on the reading comprehension skills of eighth-grade students at UPTD SMP Negeri 3 Mandrehe. A quasi-experimental, nonequivalent pretest-posttest design was implemented with 60 purposively selected students, who were divided into two groups: a control group and an experimental group. The control group received conventional teaching methods, while the experimental group was taught using a memory game from the Interacty platform. Data were collected through multiple-choice reading comprehension tests administered before and after the treatment. The results were analyzed using paired and independent sample t-tests as well as N-Gain calculations to measure the improvement in reading comprehension skills. The analysis revealed that the experimental group showed a significantly higher improvement in reading comprehension, with an N-Gain score of 0.792 (high) compared to the control group's 0.244 (low). The findings indicate that memory games effectively enhance vocabulary retention, increase student motivation, improve focus, and create an engaging classroom atmosphere. By incorporating memory games, students became more actively involved in learning, which contributed to improved reading comprehension skills. The study concludes that memory games are a valuable tool for improving reading comprehension and fostering an enjoyable and meaningful learning experience. Therefore, it is recommended that memory games be integrated into junior high school English instruction as an innovative teaching strategy to enhance students' reading skills. The research highlights the potential of interactive and engaging methods in facilitating language learning, thus suggesting that educators should consider adopting such approaches to improve educational outcomes in reading comprehension.

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**Keywords:** Eighth Grade Students, Learning Motivation, Memory Game, Reading Comprehension, Vocabulary Retention.

## 1. Introduction

The 21st century is marked by openness, globalization, and rapid technological progress influencing how people work, interact, and learn (Mardhiyah et al., 2021). The Industrial Revolution 4.0 has shifted education from merely transferring knowledge to developing skills

needed in modern life (Rahayu et al., 2022). Advances in science and technology have changed curriculum, teaching strategies, and media use. While these changes open opportunities for innovation, they also present challenges. Indonesia's education system ranks 72nd of 79 countries (Risayani et al., 2024), signaling the need for improvement.

One urgent focus is English proficiency. The EF English Proficiency Index (2024), involving 2.1 million test-takers from 116 countries, places Indonesia 80th with a low score of 468. Several provinces remain at low or very low levels, and only a few major cities reach medium proficiency. This reflects the need to strengthen English skills to compete globally. Language plays a crucial role in students' cognitive, social, and emotional growth (Siswandi, 2018). English dominates global communication, used in over half of websites and spoken in 186 countries (Blank, 2023). Mastery of listening, speaking, reading, writing, grammar, and vocabulary enables active participation in a global society. Under the Kurikulum Merdeka, junior high English emphasizes practical communication relevant to daily life (Masita et al., 2024), while teachers are encouraged to use creative, student-centered media (Wahyudi, 2025).

Reading comprehension is central to language learning, supporting vocabulary growth, critical thinking, and understanding of complex texts (Lay Hoon & Mohd Embros, 2020). At UPTD SMP Negeri 3 Mandrehe, many Grade VIII students face difficulties due to low motivation, limited vocabulary, and repetitive materials. Comprehension requires more than decoding it involves interpreting context and analyzing meaning. Low motivation slows this process (Mukhlis et al., 2024).

Game-based learning is recognized for improving engagement and reading skills (Daulay, 2021). One potential medium is the memory game, an educational adaptation of a traditional matching game aimed at enhancing memory, focus, and vocabulary. Modern card versions, popularized by Ravensburger in 1959, are now integrated into language learning to help students retain vocabulary and sentence structures (Supriyadi et al., 2018). As a learning medium, memory game offers cognitive benefits better working memory, attention, and long-term retention while fostering motivation and active participation. Ostovar-Namaghi et al. (2024) confirm its positive impact on focus, memory, and comprehension. Vocabulary improvement through this medium directly supports reading comprehension.

At UPTD SMP Negeri 3 Mandrehe, lessons often rely on lectures, with minimal use of interactive media. Teachers' unfamiliarity with innovative methods results in monotonous delivery, while students struggle to identify main ideas, interpret vocabulary in context, and make inferences. Weak reading habits and low motivation hinder progress. Integrating \*memory game\* as a teaching medium is expected to create an interactive, enjoyable environment that builds vocabulary, boosts participation, and enhances comprehension. It is also adaptable for inclusive classrooms, benefiting students with diverse needs. Therefore, this research investigates The Effect of Memory Game on Reading Comprehension Skill of Eighth Grade Students at UPTD SMP Negeri 3 Mandrehe, aiming to provide a more engaging and effective approach to English instruction at the junior high level.

## 2. Literature Review

### Reading

English is the important aspect of language acquisition, reading due to its ability to assist students improve other associated abilities like writing, grammar, and vocabulary, stated by Nasution (2022). Larasaty & Sulastri (2019) state that reading is one of the most important skills to learn. Through reading, language learners can delve into topics they are interested in and read engaging stories. Learning English is not merely about memorizing grammar rules and vocabulary. Learning to speak, write, listen, and read are also integral parts of it. Reading is one important aspects of learning English is not an exaggeration.

Reading is a way to learn a lot of things, according to Ardiansyah & Jaya, (2007), books, newspapers, magazines, etc. are a few examples. Even so, reading comprehension requires an effort to comprehend, assess, and identify the author's thoughts in a book, which makes reading difficult. 4 categories of reading are extensive reading, intensif reading, silent reading, and reading aloud.

## Reading Comprehension

According to Cheng et al. (2024), reading comprehension is a difficult cognitive human activity that is difficult to teach, assess, and study. Word reading comprehension, inference-making skills, working memory, prior knowledge, and many other cognitive processes are all involved. Reading comprehension is regarded as the cornerstone of all other academic abilities. Being able to comprehend written content is essential for all courses. Effective problem-solving, analytical abilities, and critical and creative thinking all depend on reading comprehension. Reading comprehension by Bishara, (2024) is the cognitive process of constructing and to achieve this, readers need to master reading skills, understand vocabulary, recognize sentence structure, have general knowledge, understand context, and possess logical and abstract thinking skills. Since reading comprehension is the primary means by which students receive an education, it is a crucial aspect of learning.

## Corporate Criminal Liability Theory

Comprehension is the process of understanding what is being read or heard. It involves decoding the text or audio and making sense of it. Comprehension can be difficult but can be improved on with practice. Generally speaking, there are three primary levels of comprehension, and they include:

### a. Literal Comprehension

Literal comprehension is the ability to comprehend a text's ideas, facts, events, terminology, and expressed information.

### b. Inferential Comprehension

Inferential understanding is the capacity to draw reliable conclusions from facts and information that are presented or discovered in a text.

### c. Evaluate Comprehension

Assessment Knowledge Understanding the subject or event more thoroughly is necessary for evaluative comprehension. It entails evaluating the purpose, viewpoint, communication style, and language of an author or an event.

### d. Reorganization Comprehension

Understanding the reading material or event literally is the foundation of reorganization comprehension. You then use the knowledge you have received from different portions of the material or event to reorganize them into new patterns that include them into your notion for deeper understanding.

### e. Appreciative Comprehension

Decoding the text or audio and making sense of it is only one aspect of comprehension.

## Memory Game

Saraswati (2024) states that memory game are useful resources that can greatly improve a variety of cognitive processes essential for academic performance. Through the enhancement of memory, focus, processing speed, and problem-solving skills, these game help students do better academically in a variety of topics. Furthermore, the social and psychological advantages enhance students' general wellbeing and involvement in their studies. Including memory game in study routines and educational curricula can be a good way to improve academic performance. The memory game developed by Petrikovičová et al. (2021) is particularly appropriate for usage during the lesson's motivating or fixation phase.

With the goal of enhancing cognitive abilities that are critical for academic achievement, memory game has long been utilized as teaching aids. These game are made to improve several facets of memory and cognitive processing, and they range from easy matching game to challenging riddles.

Stated by Yonathan et al., (2021) The procedures in implementing memory game are:

- 1) When the game starts, users will see the Main Menu.
- 2) After selecting the desired level, users are immediately directed to the game screen.
- 3) The difficulty level of the game increases as the selected level progresses. Cards are randomly placed face down and paired with matching images.
- 4) Players flip one card per turn and attempt to match it with another card. If they do not match, the cards are returned to their face-down positions.
- 5) The game goes on until the time limit, turn limit, or all cards are face up.

In this study, researchers use a memory game on the web website <https://interacty.me/template-gallery>

### **Hypothesis**

$H_0$  = There is no a significant effect of memory game on reading comprehension skill of eighth grade students at UPTD SMP Negeri 3 Mandrehe

$H_a$  = There is a significant effect of memory game on reading comprehension skill of eighth grade students at UPTD SMP Negeri 3 Mandrehe

## **3. RESEARCH METHOD**

### **Research Design**

As outlined by Cook & Campbell (1979), this study used a quantitative methodology with a quasi-experimental nonequivalent pretest-posttest design. Two groups were involved an experimental group taught using a memory game and a control group taught through conventional methods. Both groups took a pretest to measure their initial reading comprehension skills and a posttest after the treatment to assess improvements.

### **Population and Sample**

All eighth-grade students from classes VIII-1, VIII-2, and VIII-3 at UPTD SMP Negeri 3 Mandrehe during the 2024–2025 school year made up the population. Purposive sampling was used to choose the sample, taking into account the pupils' varying reading comprehension skills and lack of interest in reading. There were 60 students in all, 30 of whom were in the experimental group and 30 of whom were in the control group.

### **Research Variables**

- 1) Independent Variable: The use of a memory game as a teaching medium.
- 2) Dependent Variable: Students' reading comprehension skills, including literal, inferential, and evaluative comprehension.

### **Research Instrument**

The main instrument was a multiple-choice reading comprehension test consisting of 25 items drawn from various text types (narrative, procedure, descriptive, recount, and exposition). The same set of questions was used for both the pretest and posttest. The instrument underwent validity, reliability, difficulty level, and discriminating power tests. The results showed that all items were valid ( $r_{\text{count}} > r_{\text{table}}$ ;  $\text{sig} < 0.05$ ), reliable (Cronbach's Alpha = 0.825), of moderate difficulty, and with acceptable discriminating power.

### **Data Collection Technique**

Data were collected through the following steps:

- 1) Pretest, to gauge pupils' starting proficiency in reading comprehension.
- 2) Treatment, while the control group received instruction via traditional ways, the experimental group used a web-based memory game from the Interacty platform.
- 3) Posttest, to measure students' reading comprehension improvement after the treatment.

### **Data Analysis Technique**

Data from the pretest and posttest were analyzed using SPSS version 26.0, with the following procedures:

- 1) Prerequisite Tests: Normality test (Shapiro–Wilk) and homogeneity test (Levene's test).
- 2) Hypothesis Testing:
  - a. Paired sample t-test to examine the difference between pretest and posttest scores within each group.
  - b. Independent sample t-test to examine the difference between posttest scores of the two groups.
- 3) N-Gain Calculation: To determine the effectiveness of the treatment, categorized as high ( $>0.70$ ), medium ( $0.30\text{--}0.70$ ), or low ( $<0.30$ ).

### **Research Location and Schedule**

The study was conducted at UPTD SMP Negeri 3 Mandrehe, located in Desa Lologolu, Mandrehe Subdistrict, Nias Barat Regency, North Sumatra Province, during the second semester of the 2024/2025 academic year according to a predetermined schedule.

## **4. Results and Discussion**

At UPTD SMP Negeri 3 Mandrehe, Desa Lologolu, Kecamatan Mandrehe, Kabupaten Nias Barat, North Sumatra, 60 eighth-grade students were split evenly between control and experimental groups for this study. Traditional teaching techniques were used with the control group, and the Interacty platform's memory game was used with the experimental group.

### **Instrument Analysis**

#### **Validity Test**

The validity test was conducted using IBM SPSS Statistics 26. An item was declared valid if the calculated r-value exceeded the r-table value (0.254) and the significance value was less than 0.05.

The results showed that all 25 test items met the validity criteria.

#### **Reliability Test**

The reliability of the instrument was tested using Cronbach's Alpha formula.

The Cronbach's Alpha value of 0.825 indicates that the instrument has a high level of reliability.

#### **Difficulty Level Test**

The difficulty level analysis indicated that all items were in the moderate category.

### **Discriminating Power Test**

The discriminating power test results showed that all items were acceptable and could distinguish between high- and low-performing students.

### **Prerequisite Tests**

With significance values higher than 0.05, the normality and homogeneity tests showed that the data were homogeneous and regularly distributed.

### **Hypothesis Testing**

#### **Paired Sample T-Test**

The pretest and posttest results within each group were compared using the paired sample t-test.

Both the experimental and control groups experienced notable improvements, with the experimental group experiencing a greater gain, according to the data.

#### **Independent Sample T-Test**

The two groups' posttest results were compared using the independent sample t-test.

The results indicated a significant difference in posttest scores, favoring the experimental group.

#### **N-Gain Analysis Test**

N-Gain test was conducted to measure the effectiveness of the treatment.

The memory game was more successful in enhancing reading comprehension for the experimental group, as evidenced by their N-Gain score of 0.792 (high category) compared to 0.244 (low category) for the control group.

### **Discussion**

The findings show that using the memory game improved pupils' reading comprehension abilities considerably. The experimental group's students were more motivated, engaged, and actively participated in class than the control group, which tended to be more passive. The matching activities in the memory game helped students remember vocabulary more effectively, supporting their comprehension of reading texts. These findings align with Ostovar-Namaghi et al. (2024) and Daulay (2021), who noted that game-based learning can improve focus, vocabulary retention, and motivation, while also creating a more enjoyable and interactive learning atmosphere.

## **5. CONCLUSION AND RECOMMENDATION**

Eighth-grade students at UPTD SMP Negeri 3 Mandrehe's reading comprehension abilities are significantly impacted by the memory game, according to the data analysis results. The experimental group's scores significantly increased after using the memory game, according to the results of the paired sample t-test, while the independent sample t-test revealed a significant difference between the experimental and control groups' posttest scores. The control group's N-Gain score was 0.244 (low category), but the experimental group's score was 0.792 (high category). These findings demonstrate that the memory game is effective in enhancing vocabulary retention, concentration, and learning motivation, as well as fostering an interactive and enjoyable classroom atmosphere. In light of these findings, it is recommended that English teachers integrate the memory game into reading instruction to increase students' motivation and achievement, particularly in vocabulary mastery and text comprehension. Students are also encouraged to use the memory game as an independent learning tool to practice vocabulary and comprehension in an engaging way outside classroom hours.

Furthermore, future researchers are advised to conduct broader studies with more diverse materials or combine the memory game with other instructional strategies to gain a more comprehensive understanding of its effectiveness in improving reading comprehension skills.

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