

# The Effectiveness of Using Flashcards in Improving Early Childhood Reading Skills

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## Abstract

*This study aims to analyze the effectiveness of using flashcards to improve early reading skills in young children. This research is grounded in the need for engaging, interactive learning methods that align with the developmental characteristics of early childhood. The study employed a quasi-experimental design with a pretest–posttest control group. The sample consisted of children aged 4–6 years, divided into an experimental and a control group. The experimental group received reading instruction using flashcards for four weeks, while the control group used conventional teaching methods. The results indicate a significant improvement in children's reading abilities when using flashcards compared to the control group. The improvement is evident in letter recognition, syllable understanding, and the ability to read simple words. A t-test supports the finding that flashcards have a positive, significant impact on the development of early reading skills. Therefore, it can be concluded that flashcards are an effective and practical learning medium that supports early literacy development in young children.*

**Keywords:** Flashcards, Reading Skills, Early Childhood, Early Literacy, Learning Media.

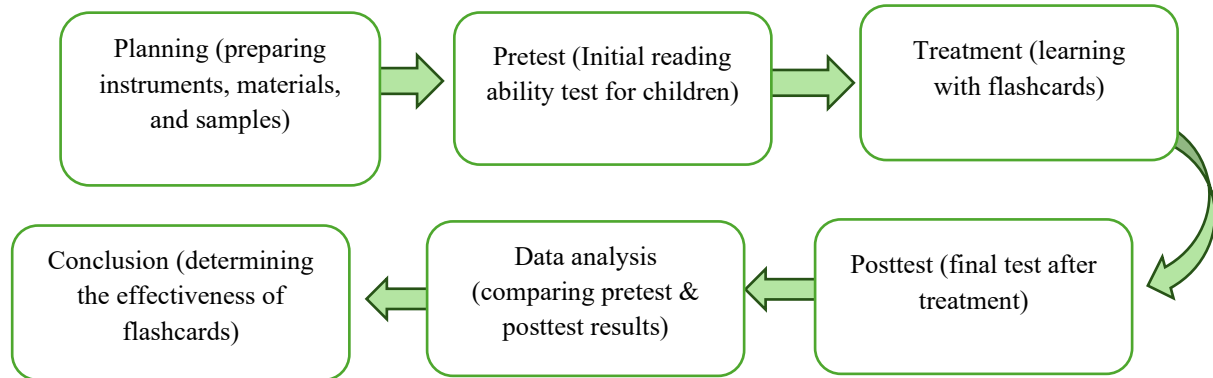
## 1. Introduction

Reading ability in early childhood is an essential factor that influences cognitive and social development. Research shows that children who master reading skills earlier tend to achieve better academically later in life, as well as to develop improved communication skills and greater self-confidence in their learning (Admin & Fatriansari, 2021; Fitria, 2021; Hanun, 2023). Thus, effective learning strategies are crucial for developing children's reading abilities. One medium proven effective in this learning process is flashcards, which serve as an attractive and interactive visual aid (Fuadah & Ruhaena, 2024; Maronta et al., 2023; Umarsana & Ngatmini, 2025). Flashcards allow children to learn letters and words in a fun way, thereby fostering positive, non-pressuring learning experiences (Fitria, 2021; Hanun, 2023; Maronta et al., 2023). Additionally, using flashcards provides flexibility in learning situations, both at home and at school, allowing them to be adapted to various contexts (Maronta et al., 2023; Sinaga et al., 2021). Flashcards are a powerful tool for enhancing letter and vocabulary recognition, which plays a crucial role in improving children's memory and comprehension. By presenting words and letters in a visual format, flashcards help children associate specific symbols with sounds and meanings, reinforcing their learning. This interactive method not only aids in memorization but also strengthens cognitive connections, making it easier for children to recall and apply what they've learned in different contexts. Additionally, flashcards can be used in a variety of learning activities, such as games and quizzes, which keep children engaged and motivated. The repetitive nature of flashcard use supports long-term retention and reinforces learning at a pace that suits each child's development. Overall, incorporating flashcards into early education is an effective strategy for building foundational language skills and fostering a deeper understanding of new concepts. (Fuadah & Ruhaena, 2024; Umarsana & Ngatmini, 2025). Although many studies show positive results in the use of flashcards, further research is needed to understand other variables that influence their effectiveness, such as teaching methods, frequency of use, and the role of parents in the learning process (Fitria et al., 2022; Susiati, 2021). Thus, research on "The Effectiveness of Using Flashcards in Improving Early Childhood Reading Skills" has the potential to provide educators and parents with valuable insights (Fathicha et al., 2025; Maronta et al., 2023; Munisah et al., 2023).

To ensure that reading instruction for young children is not only practical but also enjoyable, it doesn't solely rely on selecting media like flashcards. A diverse and innovative approach that can be adapted to children's characteristics and developmental needs is also needed, such as the development of game- or technology-based learning media (Lestari & Suryani, 2025; Novitasari et al., 2021). Thus, efforts to improve children's reading

abilities will not only benefit individuals but also society as a whole by creating a generation better prepared to face future challenges (Lestari & Suryani, 2025; Subari et al., 2024). By exploring further, it is hoped that this research can serve as a practical guide in implementing effective and engaging learning media and contribute positively to improving reading abilities in early childhood, thus preparing them for a more complex educational journey (Fajriani et al., 2024; Maulida et al., 2023; Zulminiati et al., 2023).

## 2. Research Methodology



**Picture 1.** Research Structure

### 2.1 Types and Research Design

This study uses a quasi-experimental method with a Pretest–Posttest Control Group Design. This design involves two groups: an experimental group that receives treatment in the form of using flashcards in reading instruction, and a control group that uses a conventional method without flashcard media.

**Table 1.** Research Design

Group	Pretest	Treatment	Posttest
Experiment	O <sub>1</sub>	X	O <sub>2</sub>
Control	O <sub>1</sub>	-	O <sub>2</sub>

Explanation:

O<sub>1</sub>: Initial reading ability test

X: Learning using flashcards

O<sub>2</sub>: Final reading ability test

"-": Without treatment

### 2.2 Research Location and Time

The research was conducted at one of the early childhood education institutions (PAUD) during the first semester of the current academic year. The research was carried out over a period of 4 weeks, starting from the preparation stage, data collection, and analysis.

### 2.3 Population and Sample

The research population consists of all children aged 4-6 years in that early childhood education institution. The research sample was taken using purposive sampling, based on the following criteria:

- Children aged 4-6 years
- Not yet fluent in reading
- Willing to participate in the entire research process

The total sample size was 30 children, divided into:

- 15 children in the experimental group
- 15 children in the control group

## 2.4 Research Variables

- a. Independent Variable (X): The use of flashcards in learning.
- b. Dependent Variable (Y): Early childhood reading ability, which includes:
  1. Letter recognition
  2. Syllable comprehension
  3. Reading simple words

## 2.5 Research Instruments

The instruments used were:

- a. Reading ability tests (Pretest and Posttest)
- b. Learning activity observation sheets
- c. Rubric for assessing children's reading ability

The types of tests included letter recognition, syllable construction, and simple word reading.

## 2.6 Research Procedure

The research stages were carried out thru the following systematic steps:

### Stage 1: Preparation

- a. Developing research instruments
- b. Preparing flashcard materials (letters, syllables, and words)
  - c. Validating instruments by early childhood education experts

### Stage 2: Pretest Implementation

- a. Conducting initial tests on both groups to determine reading ability before treatment

### Stage 3: Treatment Administration

- a. The experimental group received reading instruction using flashcards for 12 sessions (3 times per week × 4 weeks).
- b. The control group learned using conventional methods.

### Stage 4: Posttest Implementation

- a. The test is administered again to determine the improvement in reading ability in both groups.

### Stage 5: Data Analysis

- a. Analyze the difference between pretest and posttest scores using a t-test to determine the significance of using flashcards.

**Table 2.** Research Procedure and Explanation

Stage	Main Activities	Output
Preparation	Instrument development, flashcard material, expert validation	Ready-to-use instruments
Pretest	Initial reading ability measurement	Baseline data on initial abilities
Treatment	Learning using flashcards in the experimental group	Data on learning process development
Posttest	Final measurement after treatment	Data on reading ability improvement
Analysis	Statistical test (t-test)	Flashcard effectiveness results

The table above shows the research activity flow from beginning to end, with the results/output obtained at each stage.

## 3. Results and Discussion

### 3.1 Research Results

#### 3.1.1 Pretest and Posttest Data

The study involved two groups:

- a. Experimental group (n = 15) using flashcard media
- b. Control group (n = 15) using conventional teaching methods

Reading ability tests were conducted twice, namely before the treatment (pretest) and after the treatment (posttest).

**Table 2.** Average Pretest and Posttest Scores for Reading Ability

Group	Pretest(Mean)	Posttest (Mean)	Increase
Experiment	48	86	+38
Control	47	63	+16

Explanation:

Reading ability scores include three indicators:

- Letter recognition
- Syllable construction
- Reading simple words

Initial Interpretation:

- Both groups had almost the same initial abilities (48 vs 47).
- After the treatment, the experimental group showed a drastic improvement.
- The control group also improved, but to a much lesser extent.

### 3.1.2 Statistical Test Results

To determine the effectiveness of using flashcards, a paired samples t-test was conducted on both groups.

**Table 3.** Results of the Pretest-Posttest t-test

Group	t-value	Sig. (p-value)	Description
Experiment	6.82	0.000	Significant
Control	2.11	0.041	Significant
Experiment vs. Control	4.39	0.000	Significantly different

## 3.2. Discussion

### 3.2.1 Improvement in Reading Ability in the Experimental Group

The research results indicate that using flashcards significantly improves the reading ability of early childhood children. Children who learn using flashcards show a positive response because:

- Flashcards are visual and engaging. Pictures and text make children more focused and easier to remember.
- Information is presented simply and repeatedly. Flashcards support the drilling process, thus helping to accelerate the mastery of letters and words.
- Learning interaction is more active. Children can hold the cards, point to letters, or sort the cards, making learning activities more enjoyable.
- Improve children's attention span. Young children tend to get bored quickly, but flashcards can hold their attention longer than lectures or writing on a board.

The increase in score from 48 to 86 indicates that flashcards are effective in accelerating the early literacy process.

### 3.2.2 Improvement in the Control Group

The control group also experienced improvement (47 to 63), but not as much as the experimental group. This is natural because: a. Conventional methods tend to be monotonous. b. Children do not receive strong visual aids. c. Learning relies more on memorization without visual support. Conventional methods can still improve reading skills, but the progress is much slower compared to using media.

### 3.2.3 Comparison of the Two Groups

The differences in the results between the experimental and control groups indicate that: a. Flashcards are superior in improving reading ability. b. The increase in the experimental group's score is almost 2.3 times higher than that of the control group.

This strengthens the theory that visual learning media is very effective for early childhood because it aligns with their stage of cognitive development, which is still concrete.

### 3.2.4 Most Improved Indicators

Based on the observation sheet, the highest improvements were seen in:

- a. Letter recognition Letter flashcards help children remember letter shapes faster.
- b. Reading simple words Illustrated flashcards make it easier for children to connect pictures with writing.
- c. Arranging syllables Children are faster at arranging letter cards into syllables using a game-based approach.

**Table 4.** Improvement in Each Reading Ability Indicator

Indicator	Experiment (Increase)	Control (Increase)
Letter Recognition	High	Medium
Compilation of a glossary	Medium-High	Low
Reading simple words	High	Medium

### 3.2.5 Factors Influencing the Effectiveness of Flashcards

Some factors supporting the success of flashcards in this study include:

- a. Strong visualization helps accelerate understanding.
- b. The game-like nature makes children more motivated.
- c. The size and attractive colors of the cards enhance focus.
- d. Interactive teacher guidance makes the learning process more enjoyable.
- e. Repeated use strengthens long-term memory.

### 3.2.6 Important Research Findings

- a. Flashcards are effective in improving reading ability.
- b. Significant improvement was observed in all reading indicators.
- c. Children are more enthusiastic about learning when using visual media.
- d. Statistical results prove a real difference between the experimental and control groups.
- e. Media flashcards can be a solution for early reading learning in early childhood education.

## 4. Conclusion

Based on the research findings on "The Effectiveness of Using Flashcards in Improving Early Childhood Reading Skills," it can be concluded that using flashcards has been proven to have a positive and significant impact on improving the reading abilities of children aged 4-6 years. Flashcards can speed up the process of letter recognition, help children form syllables, and improve their ability to read simple words more effectively than conventional teaching methods. The increase in pretest and posttest scores in the experimental group indicates that flashcards are not only visually appealing but also capable of facilitating an active, interactive, and enjoyable learning process. The use of flashcards supports the learning characteristics of early childhood children, who require concrete, visual, and repetitive experiences to reinforce understanding. The statistical test results showing a significant difference between the experimental and control groups further confirm the effectiveness of this medium. Thus, flashcards can be recommended as a practical, innovative, and suitable alternative learning medium for use in early childhood education institutions as well as for home learning support. The targeted and consistent use of flashcards has the potential to improve early literacy skills and prepare children for subsequent learning stages.

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## 6. References

- Admin, A., & Fatriansari, A. (2021). Pemberian Kartu Flash Terhadap Kemampuan Membaca Anak Tk Azhariyah 12 Ulu Palembang. *Jurnal Kesehatan Dan Pembangunan*, 11(21), 13–18. <https://doi.org/10.52047/jkp.v11i21.93>
- ARI, A., & TAŞGIN, E. (2023). The Relationship Between Organizational Social Capital, Organizational Identity and Organizational Trust Levels of Academicians in Sports Education Institutions. *Turkish Journal of Sport and Exercise*, 25(3), 433–445. <https://doi.org/10.15314/tsed.1378416>
- Fajriani, K., Adinda, A., & Liana, H. (2024). Eksplorasi Media Edukasi Untuk Peningkatan Kemampuan Bahasa Anak Usia Dini: Studi Kasus Kualitatif Di Desa Dayak Pampang. *Jurnal Pendidikan Indonesia*, 5(9), 814–825. <https://doi.org/10.59141/japendi.v5i9.4712>
- Fathicha, A. A., Agustin, N., & Sutono. (2025). Pengembangan Media Reading Wheel Board Untuk Kesiapan Membaca Anak Transisi. *Abata Jurnal Pendidikan Islam Anak Usia Dini*, 5(2), 162–182. <https://doi.org/10.32665/abata.v5i2.5023>
- Fitria, N. (2021). Kemampuan Keaksaraan Melalui Media Digital “Bermain Keaksaraan” Pada Anak Usia Dini. *Raudhatul Athfal Jurnal Pendidikan Islam Anak Usia Dini*, 5(1), 36–49. <https://doi.org/10.19109/ra.v5i1.6781>
- Fitria, N., Amelia, Z., & Nurfadilah, N. (2022). Pengaruh Flashcard Path to Literacy Terhadap Kemampuan Literasi Baca Tulis. *Jurnal Obsesi Jurnal Pendidikan Anak Usia Dini*, 6(5), 4039–4048. <https://doi.org/10.31004/obsesi.v6i5.2236>
- Fuadah, N. R., & Ruhaena, L. (2024). Aktivitas Menyenangkan Untuk Stimulasi Membaca Permulaan. *Jurnal Obsesi Jurnal Pendidikan Anak Usia Dini*, 8(2), 353–366. <https://doi.org/10.31004/obsesi.v8i2.5380>
- Hanun, H. K. K. (2023). Upaya Peningkatan Kemampuan Membaca Permulaan Pada Anak Usia Dini Di Masa Pandemi Covid-19. *Preschool Jurnal Pendidikan Anak Usia Dini*, 4(1), 21–32. <https://doi.org/10.35719/preschool.v4i1.14>
- Khayer, A., Jahan, N., Hossain, M. N., & Hossain, M. Y. (2021). The adoption of cloud computing in small and medium enterprises: a developing country perspective. *VINE Journal of Information and Knowledge Management Systems*, 51(1), 64–91. <https://doi.org/10.1108/VJIKMS-05-2019-0064>
- Laorden, N. L., Sarmiento, J. M. P., Romo, G. D. A., Acuña, T. R., & Acopiado, I. M. A. (2022). Impact of supply chain disruptions during the COVID-19 pandemic to micro, small and medium enterprises in Davao Region, Philippines. *Journal of Asia Business Studies*, 16(3), 568–586. <https://doi.org/10.1108/JABS-05-2021-0216>
- Lestari, S. A., & Suryani, Y. D. (2025). Pengembangan Media Pembelajaran E-Flashcard Berbasis Kuliner Kota Palembang Dalam Mengenalkan Pra-Membaca Anak Usia 5-6 Tahun. *Vox Edukasi Jurnal Ilmiah Ilmu Pendidikan*, 16(1), 267–280. <https://doi.org/10.31932/ve.v16i1.4726>
- Maronta, Y., Sutarto, J., & Isdaryanti, B. (2023). Pengaruh Media Flashcard Berbasis Digital Terhadap Kemampuan Membaca Awal Anak Usia 5-6 Tahun. *Jurnal Obsesi Jurnal Pendidikan Anak Usia Dini*, 7(1), 1142–1161. <https://doi.org/10.31004/obsesi.v7i1.4152>
- Maulida, D. N., Kusna, S. L., & Puspitasari, E. (2023). Pengembangan Media Pembelajaran Koper Literasi Untuk Menstimulasi Kemampuan Literasi Anak Usia 5-6 Tahun. *Murhum Jurnal Pendidikan Anak Usia Dini*, 4(2), 568–579. <https://doi.org/10.37985/murhum.v4i2.330>
- Munisah, I., Mulyadi, S., & Mulyana, E. H. (2023). Analisis Kebutuhan Pengembangan Animal Scrabble Untuk Memfasilitasi Kemampuan Membaca Permulaan Anak Usia 5-6 Tahun. *Ceria Jurnal Program Studi Pendidikan Anak Usia Dini*, 12(2), 27. <https://doi.org/10.31000/ceria.v12i2.9927>
- Novitasari, Y., Prastyo, D., Iftitah, S. L., Reswari, A., & Fauziddin, M. (2021). Media Daur Ulang (Recycle System) Dalam Kemampuan Membaca Bahasa Inggris Awal Anak Usia Dini. *Jurnal Obsesi Jurnal Pendidikan Anak Usia Dini*, 6(3), 1323–1330. <https://doi.org/10.31004/obsesi.v6i3.1209>
- Nurwijayanto, P. R., Supanto, F., Setyawati, D., & Dharmawan, M. M. (2024). Analysis of Factors Influencing Technology Mastery in Technopreneur SMES in Malang: Innovation Creativity, Resilience, and Social Networking. *Journal of Economics, Finance And Management Studies*, 07(05). <https://doi.org/10.47191/jefms/v7-i5-74>
- Sinaga, E. S., Dhieni, N., & Sumadi, T. (2021). Pengaruh Lingkungan Literasi Di Kelas Terhadap Kemampuan Membaca Permulaan Anak. *Jurnal Obsesi Jurnal Pendidikan Anak Usia Dini*, 6(1), 279–287. <https://doi.org/10.31004/obsesi.v6i1.1264>
- Subari, S., Radita, N., & Anam, C. (2024). Aplikasi Pengenalan Alat Transportasi Menggunakan Augmented Reality. *Jurnal Nasional Komputasi Dan Teknologi Informasi (Jnkti)*, 7(6). <https://doi.org/10.32672/jnkti.v7i6.8342>
- Susiati, S. (2021). Media Kartu Dalam Meningkatkan Kemampuan Membaca Siswa Di TK Negeri Pembina IV Kademangan Tangerang Selatan. *Pakar Pendidikan*, 18(2), 74–87.

<https://doi.org/10.24036/pakar.v18i2.178>

Umarsana, S. Z. N. N. P., & Ngatmini, N. (2025). Pengaruh Media Kartu Huruf Terhadap Kemampuan Membaca. *Ulil Albab Jurnal Ilmiah Multidisiplin*, 4(9), 2102–2106. <https://doi.org/10.56799/jim.v4i9.10245>

Zulminiati, Z., Salamah, U., & Roza, D. (2023). Preliminary Research Media Pembelajaran Matematika Anak Usia Dini. *Murhum Jurnal Pendidikan Anak Usia Dini*, 4(2), 666–676. <https://doi.org/10.37985/murhum.v4i2.318>