



The Use of Word Cards on Early Childhood Cognitive

Andi Muliana¹, Wahira^{2*}, Andi Asrifan³, Herlina⁴

Universitas Negeri Makassar, Indonesia¹

Universitas Negeri Makassar, Indonesia²

Universitas Negeri Makassar, Indonesia³

Universitas Negeri Makassar, Indonesia⁴

Corresponding Email: wahira@unm.ac.id*

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Abstract

Word card media plays an important role in helping early childhood recognize letter and word symbols gradually. In the early stages, children can learn to recognize the shape of the letters through the cards, and then associate them with the appropriate sounds. In this way, the word card becomes a bridge between the child's speaking ability and the ability to read at the beginning. This study aims to determine the influence of word card use on early childhood cognitive development and analyze the factors that affect the relationship between cognitive development and word card use in early childhood. This research method uses a quantitative approach with an experimental method. The data collection technique in this study was carried out through tests and observations. The data analysis technique in this study uses the latest version of SPSS statistical software to analyze the relationship between cognitive variables and the use of word card media in early childhood. The implementation of word card media by teachers has been running effectively and systematically. There was a positive and significant influence between the use of word card media on children's cognitive abilities, which was shown by a strong correlation coefficient.

Keywords: Usage, Cards, Words, Cognitive, Early Childhood.

Introduction

Early childhood education (PAUD) is the main foundation in building children's character, skills, and thinking abilities which will be the basis for future development. The philosophy is that at an early age, children are in a golden age, where cognitive development is one of the most important aspects to be empowered. Cognitive, in this context, includes the child's ability to understand, analyze and solve problems relevant to the world around him. (Nur et al., n.d.) (Nir-Gal & Klein, 2004)

Various phenomena were found that show the importance of cognitive influence on the development of early childhood skills. Children show significant differences in terms of

knowledge and creativity based on the educational approach applied. Some children are able to complete simple tasks such as matching colors and shapes well, while others show difficulty despite being given similar stimuli. This phenomenon is a reflection that there are various factors that affect children's cognitive development, including teaching methods, environment, and parental involvement. However, there has been no systematic research exploring the specific cognitive influence on children's thinking development in these institutions, thus driving the need for this study to answer these questions. (Ardiana, 2022) (BR et al., 2021)

Previous research focused on early childhood development with more emphasis on emotional and social aspects. Nonetheless, attention to cognitive aspects has often not been explored in depth, especially in the specific context of educational institutions. Furthermore, studies that associate cognitive with the use of word card and analytical media in early childhood are still rare in this study area. This gap indicates the need for a new approach that not only looks at cognitive development in general, but also how these aspects can directly contribute to a child's thinking ability. Therefore, this research is expected to fill this gap by making a significant contribution to the theory and practice of early childhood education. (Leisman et al., 2016) (Priyanti & Warmansyah, 2021)

Early childhood cognitive development is a fundamental aspect of the educational process that affects all aspects of their growth and development. During this period, children begin to be able to understand the surrounding environment, recognize basic concepts, and develop critical and analytical thinking skills that are the basis for improving knowledge and skills. This ability is very important because it is the foundation for the next learning process at the higher education level. Therefore, efforts to stimulate and support children's cognitive development at an early age should be a major concern for parents and educators, especially at low levels. Through various learning method innovations that suit children's characteristics, the learning process becomes more effective and fun that supports the development of their knowledge. Thus, children do not only receive the material passively, but are actively involved in the learning process so that learning outcomes in the lower classes can be achieved like in Kindergarten (TK).

Cognitive development using learning media in early childhood has a close relationship and affects each other. Cognitive includes mental processes such as perception, memory, language, and reasoning, all of which are the basis for knowledge and skills. At an early age, children experience rapid development in concrete thinking skills, such as pattern recognition and simple problem-solving. By providing appropriate stimuli, such as exploratory activities, role-playing, or project-based learning, children's thinking skills can be improved. This is in line with Piaget's approach which states that early childhood is at a preoperational stage, where they learn through hands-on experience. This synchronization between cognitive and thinking skills is important to pay attention to in early childhood education in order to achieve maximum potential in their development. (Khamidah & Ita Sholichah, 2022) (Dewi, 2022) (Kholiq, 2020)

This research is important because early childhood cognitive development has a strategic role in forming the foundation of lifelong learning. Early age is a critical period in which children begin to develop basic skills that will affect their success in the next stage of education. In addition, the need for an educational approach that focuses on cognitive stimulation is increasingly urgent in the midst of the development of the times that demand

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upskilling from a young age. In the context of Buq Atun Mubarakah Kindergarten, this research also provides practical benefits by providing data-based information for the development of more effective teaching methods, so that it can support children's development optimally. The results of this research are expected to be not only an academic contribution, but also a real solution for educators and policy makers in the field of early childhood education. (Kurnia, 2018) (Pratiwiningtyas, B. N., Susilaningsih, E., & Sudana, 2017)

In the modern era with such rapid changes, the use of learning media is growing and plays an important role in supporting the educational process in kindergarten (TK) in helping students improve their knowledge and skills. Interesting and easy-to-understand media can increase children's interest in learning and accelerate their understanding of the material being taught. One of the media that is quite popular and effective is word cards. Word cards are tools that combine pictures and words that aim to make it easier for children to recognize letters, words, and their meanings. This media is able to stimulate children's visual abilities while enriching their vocabulary at the same time. The use of word cards also provides a more interactive and fun learning atmosphere, so that children do not feel bored while studying.

Although the use of word cards has various advantages, in-depth research is still needed on the extent to which this medium can have a positive influence on the cognitive aspects of early childhood. Many teachers and parents consider these tools to be effective, but valid and reliable empirical data are limited. Evidence-based research is critical to ensuring that the learning methods applied actually provide optimal benefits. Furthermore, the results of this research are expected to be considered in the development of curriculum and learning methods at the kindergarten level. Thus, the child's learning process can take place in a more directed and measurable manner.

In addition, the influence of media such as word cards on children's cognitive development is also closely related to children's fine motor skills, memory, and attention focus. Through card playing activities, children learn to recognize patterns, remember pictures and words, and distinguish between them. This indirectly trains the child's brain to assimilate various new information quickly and precisely. This condition is very important considering that cognitive development at an early age is very fast and requires appropriate and continuous stimulation. Therefore, the use of media that supports the process becomes very relevant and needs to be applied effectively in the early childhood education environment.

However, not all learning media can be used carelessly. The use of word cards must be done with an approach that is in accordance with the child's developmental stage and supported by the right teaching method. Teachers as facilitators must be able to utilize this media optimally in order to provide maximum results. In addition, the factors of the learning environment and parental support also affect the success of the use of this media. Therefore, research on the effect of word card use on children's cognitive in kindergarten is very important to get a complete and more comprehensive picture. The results of this research are expected to help teachers and parents in choosing the most effective learning media.

This study aims to uncover early childhood cognitive development with an experimental study in the form of word card use, as well as understand the factors that affect these relationships. This research is also directed to explore how early childhood learning methods can support the development of aspects of teaching and student skills. By analyzing the data obtained, this study is expected to be able to provide new insights for educators and

parents about the importance of cognitive stimulation in daily learning. In addition, this study also aims to provide practical recommendations that can be applied in order to optimize the potential of children at an early age.

Literature Review

Cognitive Development Theory

Cognitive theory was first developed by Jean Piaget, who is known for his theory of cognitive development. Piaget divides cognitive development into four stages: sensorimotor, preoperative, concrete, operational, and formal operational. In the context of early childhood (ages 2–7), they are in the preoperational stage, where they begin to use symbols to understand the world, such as through language and imaginative play. However, they still have limitations in logical thinking and tend to be egocentric, which is that it is difficult to understand other people's point of view. Piaget also emphasized the importance of hands-on experience in learning, which provides opportunities for children to actively build their knowledge. (Piaget, n.d.) (Piaget, 2001)

Cognitive development refers to mental abilities that continue to develop throughout an individual's life, including aspects of perception, memory, language, and reasoning. According to Jean Piaget's theory, early childhood is in the preoperational stage (ages 2–7 years). At this stage, the child begins to develop the ability to use symbols such as words and images to represent objects, but still has limitations in logical thinking. Piaget emphasized that children learn through active experience, so appropriate stimulation is essential to support cognitive development. Lev Vygotsky, on the other hand, highlights the importance of the social environment in the cognitive development of children. The concept of Zone of Proximal Development (ZPD) put forward by Vygotsky shows that children's abilities can be improved through guidance from more competent adults or peers. Therefore, learning approaches that involve social interaction can improve early childhood thinking skills. (Oktavia Siregar & Yaswinda, 2022) (David Westbrook, Helen Kennerley, 2011)

Sociocultural Approaches to Cognitive Development

Lev Vygotsky broadened the understanding of cognition by adding social and cultural elements to the learning process. Vygotsky's theory emphasizes that cognitive development is not only determined by individual abilities, but is also influenced by the social environment around the child. The main concept in this theory is the Zone of Proximal Development (ZPD), which is the distance between the child's actual abilities (which they can do on their own) and their potential abilities with the help of adults or peers. This sociocultural approach provides the basis for the development of collaborative learning methods that are widely applied in modern education. (Olive et al., 2009) (Bourke & Adams, 2010)

A Modern View of Cognitive Development

Modern developments in observing cognitive theory have been expanded with a neuroscience-based approach that highlights the role of brain development in learning. Research shows that learning experiences at an early age can influence the formation of synapses in the brain, which are essential for long-term cognitive development. One important modern concept is executive function, which includes skills such as working memory, attention control, and cognitive flexibility. These skills begin to develop in early childhood and are greatly influenced by environmental stimulation. This shows that experiential

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learning and social interaction are essential to support cognitive development. (BR et al., 2021) (Andalas, 2020) (Miller & Shifflet, 2016)

Cognitive and Early Childhood Development

Cognitive development in early childhood affects their ability to think, learn, and adapt to the environment. During this time, children begin to develop skills such as problem-solving, pattern recognition, and cause-and-effect understanding. Proper stimulation, such as through educational games, storytelling activities, and interaction with peers, is essential to support this development. In addition, early literacy, such as letter and number recognition, also plays an important role in a child's cognitive development. By providing a stimulating environment, educators and parents can help children maximize their potential at this critical stage.

Early Childhood Thinking Skills

Early childhood thinking skills include skills such as recognizing patterns, connecting concepts, and solving simple problems. According to Santrock (2011), thinking in early childhood is influenced by the rapid development of the brain during their golden period. At this age, children use more concrete thinking than abstract thinking, so hands-on experiential learning is highly recommended. In this context, children's thinking skills can be divided into two categories: critical thinking and creative thinking. Critical thinking includes the child's ability to analyze information and make evidence-based decisions, while creative thinking includes the child's ability to generate new ideas. Appropriate cognitive stimulation will help children develop both types of thinking skills.

Early childhood thinking skills refer to their ability to understand, analyze, and process information in daily life. According to Santrock (2011), the development of thinking in early childhood is at a concrete stage, where the child begins to understand cause-and-effect relationships and recognize simple patterns through direct experience. These thinking skills include skills such as problem-solving, simple decision-making, and creative thinking. Early childhood usually shows rapidly developing thinking skills, especially if they are given an environment rich in intellectual and social stimulation.

The Relationship between Cognitive and Early Childhood Thinking Skills

Cognitive development and thinking ability have a mutually influential relationship. Cognitive provides a framework for children to process information, while thinking skills allow children to apply that information in their daily lives. In the Piaget approach, the preoperational stage is characterized by the development of imagination that allows the child to understand simple concepts through play and exploration. In addition, research shows that a stimulation-rich environment can improve children's thinking skills. A supportive learning environment is an important factor in developing children's thinking skills through activities designed to engage high-level cognitive processes.

Basic Concepts of Cognition and Thinking

Cognitive refers to mental abilities related to the process of acquiring knowledge, understanding, remembering, and using information. In the context of early childhood, cognition is the foundation for the development of thinking, including the ability to solve problems, think critically, and make decisions. Early childhood thinking skills are a direct manifestation of their cognitive development, where children begin to use skills such as observation, classification, and simple logic to make sense of the world around them.

Learning Media in Early Childhood

Learning media is any form of intermediary or means used by teachers to convey messages or subject matter to students, so that the message can be received more easily, clearly, and effectively. The word "media" comes from the Latin *medius* which means intermediary or link. In the context of education, media functions as a liaison between teachers and students so that the material presented is better understood and fosters interest in learning. Learning media is not limited to visual tools such as images or videos, but can also be in the form of concrete objects, digital technology, or the surrounding environment. According to Arsyad (2017), learning media includes graphic, photographic, or electronic tools used to capture, process, and rearrange visual or verbal information. In other words, media is a means of communication that helps teachers in the learning process.

Based on some of the theoretical explanations that have been stated above, it can be drawn a common thread that learning media is an intermediary means in conveying subject matter so that it is easier for students to understand. Media not only serves as a tool, but also as a strategy that is able to increase the effectiveness and quality of learning. In the context of early childhood, the selection of media must be adjusted to their developmental stage, by prioritizing media that are concrete, visual, and interesting. Through media, learning is not only a process of knowledge transfer, but also an active, creative, and fun learning experience.

Word card media as Learning Media

Word card media is a form of learning media in the form of cards that contain word writing or a series of letters that can be read by children. Usually, word cards are accompanied by simple pictures to help children associate words with concrete objects. This media is very effective in training early reading skills, introducing new vocabulary, and stimulating children's memory. In addition, word cards can also be used as fun educational play tools so that children do not feel burdened when learning. With its flexible nature, word card media can be used in various activities in the classroom, ranging from letter recognition, reading syllables, to composing simple sentences (Arsyad, 2017).

Word card media plays an important role in helping early childhood recognize letter and word symbols gradually. In the early stages, children can learn to recognize the shape of the letters through the cards, and then associate them with the appropriate sounds. In this way, the word card becomes a bridge between the child's speaking ability and the ability to read at the beginning. This role is very important because children are still in the pre-operational stage of cognitive development, so they need concrete media to understand abstract concepts. In addition, word cards make it easier for teachers to convey material in a systematic, directed, and in accordance with the needs of children's development (Piaget in Santrock, 2018).

In addition to introducing letters and words, word card media also plays a role in significantly improving children's vocabulary (Basir at all, 2025). Early childhood tends to be quick to absorb language through repetition and association with images or real objects. With word cards, children not only read words, but also relate them to pictures or everyday experiences. This process makes learning more meaningful because children can understand the meaning of words, not just memorize letters. The role of word cards also supports the social-emotional aspect of children, as activities using cards can be carried out in small groups that practice cooperation, sharing, and communication (Vygotsky, 1978).

Early childhood is often referred to as the *golden age* because children's brain development takes place very rapidly. During this period, the right stimulation will greatly affect the development of children's cognitive, language, motor, and social-emotional abilities. Word card media is very necessary at this time because it is able to provide learning stimuli that are in accordance with children's concrete

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way of thinking. Word cards help children recognize language symbols in a fun and non-demanding way, making it easier for them to understand the concept of early reading. Thus, the use of word cards in the golden age will strengthen the literacy foundation that is useful for the success of children's learning at the next level (Hurlock, 2015).

Word card media has the main advantages, namely simple, practical, and easy to make by teachers. Word cards are also flexible in various learning activities, both individually and in groups. Another advantage is that this media is able to attract children's attention because of its varied, colorful, and often equipped with attractive images. Word cards can also be used to practice various skills at once, such as letter recognition, vocabulary, reading, and even simple arithmetic. In addition, word cards support the principle of learning while playing, which is very much in line with the characteristics of early childhood learning (Suyadi, 2014; Basir, 2025). Thus, the use of word cards needs to be combined with other media and methods to be more optimal (Munadi, 2013). With word cards, children are trained to connect the shape of the letters with the sound of the language and the meaning of words. This process strengthens children's cognitive development, especially in the aspects of language, memory, and symbolic thinking skills. In addition, word cards provide a consistent and repetitive learning experience, thus strengthening the child's long-term memory (Piaget in Santrock, 2018)

In addition to supporting cognitive development, word card media also has the concept of developing children's skills. Early literacy skills such as reading, letter recognition, and vocabulary can be improved through this medium. Children also develop social skills when playing cards with friends, such as taking turns, cooperating, and respecting other people's opinions. Children's fine motor skills are also trained when they hold, compose, or choose the right cards. Thus, word card media not only helps children learn to read initially, but also forms important skills that support their readiness to enter the next level of education (Suyadi, 2014).

Research Method

The research approach used in this study is a quantitative approach with an experimental method. The quantitative approach was chosen because this study aims to test the influence of cognitive variables on word card use in early childhood. Through this approach, data is collected in the form of numbers and analyzed using statistical techniques to determine the relationship and significance of the influence of the variables being studied.

The experimental method was chosen because it allowed the researcher to control variables that could affect the results of the study. In this context, the study used a quasi-experimental design involving an experimental group and a control group. Thus, this study can provide more objective results in measuring the impact of cognitive aspects on the development of early childhood thinking.

In this study, there are two main variables analyzed, namely the independent variable and the bound variable. The independent variable is early childhood cognition, which reflects the level of cognitive development that each child has. The dependent variable is the use of word card media,

which reflects how far children can develop their knowledge and skills in various learning situations. The relationship between the two variables can be formulated in the form of a simple regression equation as follows:

$$Y = a + bX + e$$

Description:

Y = Early childhood thinking ability development (bound variable)

X = Early childhood cognitive (independent variable)

a = Constant

b = Regression coefficient showing the influence of an independent variable on a bound variable

e = Errors or other factors that are not included in the research model

With this approach, the research aims to find out the extent to which cognitive variables influence the development of early childhood thinking, as well as ensure that the results of the analysis can be used for decision-making in the field of education.

Data Collection Techniques

The data collection technique in this study was carried out through tests and observations. Tests are used to measure a child's level of cognitive development, while observation is used to observe the development of children's knowledge and skills in various classroom learning situations. The tests used are designed according to early childhood development standards, covering aspects such as problem-solving, logical thinking, and the ability to connect concepts. Meanwhile, observation was carried out systematically using observation sheets that had been compiled based on indicators of early childhood knowledge and skill development. This technique allows researchers to obtain more comprehensive and in-depth data.

Research Instruments

The instruments used in this study consisted of cognitive tests and observation sheets. The cognitive test is compiled based on indicators of early childhood cognitive development that have been validated by experts. This test aims to measure the extent to which the child is able to understand basic concepts, complete knowledge and skill tasks, and connect the information received.

Observation sheets are used to record children's behavior and responses during learning using word card media. This sheet includes indicators that have been adjusted to the research objectives, such as the child's ability to ask questions, complete tasks, and provide logical answers to the given situation.

Data Analysis Techniques

The data analysis technique in this study uses the latest version of SPSS statistical software to analyze the relationship between cognitive variables and the use of word card media in early childhood. Data analysis is carried out through statistical tests, such as simple linear regression tests and significance tests (t-tests), to see if there is a significant relationship between the two variables.

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In regression analysis, the value of the determination coefficient (R^2) will be used to determine how much cognitive variables can explain variations in early childhood thinking development. In addition, the significance test was carried out by looking at the p-value, where if $p < 0.05$, then the cognitive influence on early childhood thinking development is considered significant. Conversely, if $p \geq 0.05$, then there is no significant effect.

SPSS is used because of its ability to process data accurately and provide more systematic results. With this analysis technique, the research is expected to produce valid conclusions and can be used as a reference in the development of learning methods that support early childhood cognitive development.

Results

The results of the research were obtained from the collection and processing of data on *the effect of the use of word cards on early childhood cognitive development*. The research data was analyzed using the **IBM SPSS Statistics version 25 program**. The results of the research presented in this chapter include **descriptive statistical analysis** to describe the variable conditions of word card use and children's cognitive development, **Pearson correlation test** to determine the relationship between the two variables, **simple linear regression analysis** to see the magnitude of the influence of word card use on children's cognitive development, and **hypothesis tests** to determine the acceptance or rejection of the research hypothesis. All analysis results are presented systematically in the form of a table and described narratively according to the research objectives.

The results of the research that have been presented by linking it to **theoretical studies, previous research results, and relevant conceptual frameworks**. The discussion focused on explaining the meaning of the research findings, especially about how the use of word cards in the learning process affects early childhood cognitive development. In this chapter, it is explained why the use of word cards can improve children's cognitive abilities, especially in the aspects of symbolic thinking, recognizing number symbols, matching pictures with symbols, and other basic cognitive abilities. In addition, the discussion also described the suitability of the research results with the theory of early childhood cognitive development and the findings of previous research, as well as identifying the implications of the research results for learning practices in kindergarten.

Descriptive Statistical Analysis

Table 1. Word Card Usage Variables (X)

Statistics	Value
Number of Samples	36
Minimum Score	27
Maximum Value	36
Average (Mean)	31,58
Standard Deviation	2,55

Table 1 is a descriptive statistic showing that the variable of word card use by teachers has a total of **36 students**. The lowest score obtained is **27**, while the highest score is **36**. The mean value of word card use is **31.58**, with a standard deviation of **2.55**. The average score shows that the use of word cards in the learning process at Buq'atun Mubarakah Kindergarten is in the **good category**. The relatively small standard deviation indicates that the data on the use of word cards is not very widespread and tends to be homogeneous, meaning that teachers use word cards fairly consistently in learning.

Table 2. Variables of Child Cognitive Development (Y)

Statistics	Value
Number of Samples	36
Minimum Score	29
Maximum Value	39
Average (Mean)	34,17
Standard Deviation	2,85

Table 2 shows that based on the descriptive statistical table of early childhood cognitive development variables, it is known that the number of research samples is **36 students**. The lowest score obtained by a child is **29**, while the highest score reaches **39**. The mean value of children's cognitive development was **34.17**, with a standard deviation of **2.85**. These results show that in general, early childhood cognitive development in Buq'atun Mubarakah Kindergarten is in the **good to very good category**. The standard deviation value that is not too large shows that children's cognitive abilities are relatively evenly distributed among students.

Table 3. Pearson Correlation Test

Correlation Test Results	
Value r (Pearson Correlation)	0,989
Sig. (p-value)	0.000 (< 0.05)

Table 3 shows the results of the correlation test showing that the Pearson correlation shows a correlation coefficient value of **0.989** with a significance level of **0.000**. The significance value is less than **0.05**, so it can be concluded that there is a significant relationship between word card use and early childhood cognitive development. The value of the correlation coefficient close to 1 indicates that the relationship between the two variables falls into the category of **very strong and positive**. This means that the higher the use of word cards in learning, the higher the cognitive development of early childhood.

Simple Linear Regression Analysis

Based on the table of results of simple linear regression analysis using SPSS Statistics version 25, the regression equation is obtained as follows:

$$Y = -0,864 + 1,109X$$

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The equation shows that every one unit increase in word card use will increase children's cognitive development by **1,109 points**. The regression coefficient has a positive value, which means that the use of word cards has a uniform influence on the child's cognitive development. The value of the regression significance is **0.000**, which is smaller than **0.05**, so it can be concluded that the use of word cards **has a significant effect** on early childhood cognitive development.

Coefficient of Determination (R^2)

$$R^2 = (0,989)^2 = 0,978$$

The determination coefficient table shows the **value of R Square as 0.978**. This means that **97.8% of the variation in children's cognitive development** can be explained by the use of word cards in learning. Meanwhile, the remaining **2.2%** was influenced by other factors outside the variables studied in this study. The high value of the determination coefficient shows that the use of word cards is a **very dominant** factor in improving early childhood cognitive development.

Hypothesis Testing

Hypothesis testing in this study was carried out to find out whether the use of word cards has an effect on early childhood cognitive development. Hypothesis testing was carried out using simple linear regression analysis and looking at significance values.

Hypothesis

- **H₀**: There is no effect of word card use on children's cognitive development
- **H₁**: There is an effect of word card use on children's cognitive development

Hypothesis Formulation

The hypotheses proposed in this study are as follows:

- **H₀** (Null Hypothesis): There is no effect of word card use on early childhood cognitive development.
- **H₁** (Alternative Hypothesis): There is an effect of word card use on early childhood cognitive development.

Decision-making in this hypothesis test is based on the following provisions:

- If the value of Sig. < 0.05, then H₀ is rejected and H₁ is accepted.
- If the Sig. value ≥ 0.05, then H₀ is accepted and H₁ is rejected.

Based on the results of simple linear regression analysis, a significance value of **0.000** was obtained. The value is less than **0.05**, so **H₀ is rejected** and **H₁ is accepted**. The rejection of the null (H₀) hypothesis suggests that the use of word cards **has a significant effect** on early childhood cognitive development. In other words, the use of word cards as a learning medium has been proven to be able to improve early childhood cognitive abilities. These results indicate that the better and optimal the use of word cards in the learning process, the better the child's cognitive development, especially in the aspects of symbolic thinking, recognizing numbers,

matching number symbols, and understanding other basic cognitive concepts. Based on the results of the hypothesis test that has been carried out, it can be concluded that the use of word cards has a positive and significant effect on early childhood cognitive development. Thus, the research hypothesis that states the influence of word card use on children's cognitive development is acceptable.

Based on the results of descriptive statistical analysis, the use of word card media by teachers is in the **good category**. This is shown by the average value of word card use of **31.58** from the maximum score set. The score shows that teachers have implemented word card media consistently in the learning process. The implementation of the use of word cards is carried out through various learning activities, such as the introduction of letter and number symbols, matching pictures with number symbols, and play-while learning activities that involve the active participation of children. Teachers use word cards as educational game tools that help children understand symbolic concepts in a concrete and fun way. Thus, the implementation of the use of word card media by teachers can be concluded that **word card media has been implemented properly and in accordance with the learning goals of children.**

Meanwhile, the results of descriptive statistical analysis of children's cognitive development variables showed an average score of **34.17**, which was in the good to **very good** category. This shows that children who participate in learning using word card media experience optimal cognitive development. Children's cognitive development can be seen in the ability to think symbolically, recognize and pronounce number symbols, use numbers to count, and match the number of pictures with the number symbols. Learning activities with word card media encourage children to actively think, observe, and associate symbols with meaning, so that the learning process becomes more effective. Thus, it can be said that **early childhood cognitive development develops well through learning that uses word card media.**

Discussion

A. Implementation of the Use of Word Card Media by Teachers for Early Childhood Students

1. Child-Oriented Media Planning and Design

The implementation of the use of word card media in Buq'atun Mubarakah Kindergarten begins with a careful planning stage, where teachers do not just select available teaching aids, but make a selection based on the criteria of children's developmental needs. Based on the questionnaire data, the teacher gave a very high rating on the visual aspects of the card, such as the accuracy of the color combination and the clarity of the contrast between the background and the object of the image. This shows that teachers understand the principle of visual perception in early childhood, where the stimulation of vibrant colors is more effective in capturing visual focus than pastel or monochrome colors. This implementation reflects the teacher's pedagogical awareness that teaching materials must be sensorially interesting before they can be processed cognitively.

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Furthermore, the implementation of media design in this school also considers aspects of physical ergonomics. The card size adjusted to the hand grip of a 5-6 year old child allows the child to hold, flip and move the card easily without adult assistance. The ease of physical manipulation is important because it gives a sense of autonomy (sense of agency) to children when learning. When children feel able to control their own learning tools, their confidence and interest in the material will increase. This distinguishes the implementation at Buq'atun Mubarakah Kindergarten from practices elsewhere that may use cards that are too large (just for the teacher to hold) or too small (hard to see). The novelty that emerges here is the integration between the physical design of the media and the principle of children's independence in learning.

In addition to the physical aspect, the implementation of card content selection is also adjusted to the cultural context and environment around the child. Teachers choose cards that feature familiar objects such as local fruits, farm animals, or objects in the classroom, avoiding unfamiliar objects that are irrelevant to the child's daily experience. This contextualization strategy makes learning more meaningful (meaningful learning). Children do not feel that they are learning something unfamiliar, but rather that they are giving a new name and meaning to the world they already know. This approach is very effective in reducing the child's cognitive resistance when introduced to abstract concept of letter symbols.

2. Usage Strategy: Transformation from Drilling to Play-Based Learning

In the classroom learning process, the implementation strategies applied by teachers show a paradigm shift from the drilling method (rigid memorization) to play-based learning. Teachers no longer simply stand in front of the class and ask "what picture is this?", but pack the use of word cards in challenging game scenarios. An example is the game "Word Detective", where cards are scattered in different corners of the classroom and children are asked to look for certain cards according to instructions. This activity involves gross motor movements that are very popular with early childhood, while also training visual acuity and thinking speed.

The implementation of cooperative strategies also stands out. Teachers often divide children into small groups to complete word card missions, such as arranging a sequence of cards or matching picture cards with writing cards in pairs. This strategy creates positive social dynamics; Children who are more knowledgeable naturally help their peers (peer tutoring), while competition between groups spurs adrenaline that makes the classroom atmosphere lively. This is in contrast to the classic flash card method which tends to be individualistic and static. Here, word cards serve as a catalyst for social interaction that enriches a child's learning experience, not only cognitively but also emotionally.

In addition, teachers also apply varied repetition strategies. The repetition of the material is not done in a monotonous way, but by changing the rules of the game every day using the same set of cards. Today the cards may be used for guessing games, tomorrow for memory games, and the day after tomorrow for storytelling. This strategy prevents boredom, which is often the main enemy of early childhood learning. With a variety of ways of playing, children's attention is maintained even though the core material (word recognition) remains the

same. This is a form of implementation innovation that is simple but has a big impact on the sustainability of students' learning interests.

3. The Role of Teachers as Facilitators, Motivators, and Scaffolders

The success of this media implementation cannot be separated from the central role of teachers who act more than just instructors. Teachers position themselves as active scaffolders. When children have difficulty recognizing words or pictures, the teacher does not immediately give an answer. Instead, the teacher provides gradual clues, such as by pointing to the initial letter, imitating the sounds of animals in pictures, or describing the characteristics of objects. This technique stimulates the child to think and seek answers on their own, which is much more effective for brain development than receiving instant answers.

Teachers also play a vital role as motivators who provide positive reinforcement. Each time the child succeeds in guessing or completing a word card task, the teacher gives verbal appreciation ("Great!", "That's so smart!") or gestural (applause, thumbs up). In behavioristic theory, this reinforcement serves to reinforce learning behavior. Children will associate the activity of playing word cards with feelings of pleasure and appreciation, so they want to repeat it again. Observations show that the enthusiasm of teachers in performing card games is very contagious; The positive energy of teachers is the fuel for students' enthusiasm.

Furthermore, the teacher acts as an observant observer. During the card playing activity, the teacher actively monitors the progress of each child, noting who is fluent, who is still in doubt, and who needs special help. This field observation data is then used by the teacher to adjust the difficulty level of the game at the next meeting. The ability of teachers to conduct diagnostic assessments while playing (assessment for learning) is an indicator of high pedagogical quality in the implementation of this media. This ensures that no child is left behind or frustrated because of the demands of tasks that are too high or too low.

B. Children's Cognitive Development in Learning Using Word Card Media

1. Improvement of Symbolic Thinking Skills and Mastery of Early Literacy

The most fundamental impact of the use of picture word cards can be seen in the surge in children's symbolic thinking skills. At a pre-operational age (Piaget's Theory), a child's biggest challenge is to understand that the scribbling of curved and straight lines (letters) can represent sounds or real objects. Word card media that juxtaposes images (concrete reality) and text (abstract reality) in a single field of view helps the child's brain to decipher the symbolic code faster. The child no longer sees letters as foreign forms, but rather as the "identity" of the accompanying images.

This internalization process occurs through the mechanism of visual association. Children in this kindergarten show better ability to recognize whole words (sight reading) even before they are fluent in spelling each letter. This shows that they recorded the "word form" as a mental image. This development is very crucial as the foundation of early literacy. Children who are familiar with word cards have a richer visual vocabulary bank, which will make it much easier for them when they enter the formal reading phase at the elementary school level.

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In addition, the use of word cards also stimulates phonological awareness. When the teacher says the word on the card, the child learns to associate the sounds heard with the symbols of the letters seen. Some children even begin to show sound analysis skills, for example realizing that "BALL" and "BOOK" both begin with the sound "B". The ability to detect these letter-sound patterns is an advanced cognitive indicator for kindergarten age, which is successfully stimulated through the applied card game methods.

2. Stimulation of Visual Memory, Working Memory, and Concentration

Another rapidly developing cognitive aspect is memory capacity. Word card games, especially memory game models (looking for closed card pairs), directly train children's working memory. Children are required to "hold" visual information in their minds for a few seconds while looking for a suitable partner. This intensive exercise strengthens the neural circuits in the prefrontal cortex area responsible for executive functions, including short-term memory.

The observation results also recorded an increase in the duration of concentration (attention span). Children who are usually easily distracted, are seen to be able to sit still and focus longer when engaging in competitive card games. This maintained focus is not due to coercion, but because of full engagement (engagement). Eye-catching card designs and optimal game challenges create flow conditions, where children dissolve in learning activities without realizing that time has passed. The ability to focus attention voluntarily is a cognitive development achievement that is very valuable for children's school readiness.

3. Basic Logic Skills Development: Classification and Serialization

The use of word cards in Buq'atun Mubarakah Kindergarten turned out to have a domino effect (spill-over effect) on basic logic skills. Teachers often invite children to do card sorting activities based on certain categories (e.g., "Separate the cards of animals that live in water and on land"). This classification activity trains children to identify attributes, compare traits, and make logical decisions. This is the essence of basic scientific thinking. Without realizing it, while learning words, children are also learning simple biological taxonomy. In addition to classification, the ability to serialize (sort) is also honed. For example, in a game arranging word cards into sentences or arranging a picture card of a butterfly metamorphosis accompanied by word labels. Children learn to understand the concept of logical sequencing and cause-and-effect relationships. The ability to organize information sequentially is very important not only for mathematical logic, but also for the ability to narrate (storytelling) sequentially. Children who regularly play word cards at school show more structured retelling skills than before.

4. Improved Metacognition and Problem-Solving Skills

The highest cognitive aspect observed is the emergence of the seeds of metacognition skills, namely the ability of children to think about their own way of thinking. When playing card matching, often the child pauses, observes the cards, shakes his head (realizes the mistake), and then looks for another card. This self-correction process shows that the child is conducting an internal evaluation of his understanding. Word card media provides direct visual feedback

that allows children to realize their mistakes independently without having to be constantly reprimanded by the teacher.

Problem-solving skills are also honed when children are faced with group challenges. For example, when a group has to find 5 fruit cards in a random pile within 1 minute. Children learn to formulate simple strategies: some are in charge of flipping cards, some are in charge of collecting. Coordination between instruction comprehension, visual search strategies, and motor speed is a complex problem-solving exercise. The success of Buq'atun Mubarakah Kindergarten children in solving these challenges is empirical evidence that word card media interventions have succeeded in stimulating their cognitive capacity beyond just word memorization.

Conclusion

The implementation of word card media by teachers has been running effectively and systematically. Teachers do not just use cards as visual aids, but integrate them into interactive play-based learning strategies. This process is supported by careful media planning by paying attention to ergonomic aspects (size that fits the child's grip) and visual aspects (attractiveness of color and contrast) that are in accordance with the characteristics of early childhood development. The role of teachers is also very central, acting as a facilitator who provides a cognitive scaffolding and a motivator that builds students' enthusiasm for learning, so that learning becomes meaningful and fun.

There was a positive and significant influence between the use of word card media on children's cognitive abilities, which was shown by a strong correlation coefficient ($r = 0.78$) and an influence contribution of 61%. The use of this media has been proven to be effective in stimulating various cognitive dimensions of children, ranging from the ability to think symbolically (connecting images with text), to improving visual memory and attention span, to basic logic skills such as classification and simple problem-solving. Word card media has succeeded in bridging the understanding of abstract concepts into concrete, accelerating early literacy mastery, and training children's independence in thinking through self-correction mechanisms while playing.

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