

Improving Linguistic Intelligence through Graphic Introduction with Flashcard Media for Early Childhood

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Abstract - Early childhood ability becomes the focus of attention of many scholars, especially linguistic intelligence. Early childhood requires the practice of basic language skills. Teachers should consider the progress of children in developing linguistic intelligence to recognize the characteristics of children and their achievement abilities. In fact, children's linguistic intelligence is deficient. Children need media to help them in improving their linguistic intelligence. Therefore, this study aims to explain the increase of linguistic intelligence by introducing graphemes with flashcard media for early childhood. This study's participants were 18 students divided into two groups: nine children in the experimental group and nine other children in the control group. The study was conducted in a private kindergarten located at East Java, Indonesia. Data analysis results showed that before being treated using flashcard media, the experimental group, and the control group did not significantly differ in linguistic intelligence scores, namely $XKE = XKK = 8.6$. Posttest conducted in the experimental group increased with an average of 6.8. Whereas in the control group, the posttest value decreased by 0.4. So, it can be concluded that the control group that was not given treatment through flashcard media did not experience significant differences in scores. However, the experimental group with the treatment using flashcard

media showed an increase in linguistic intelligence. This study's findings will be valuable for teachers or researchers who want to further examine children's linguistic intelligence.

Index Terms - Early Childhood, Flashcard Media, Graphic introduction, Linguistic Intelligence.

INTRODUCTION

Currently, the child's academic ability is the focus of attention of parents and teachers because it is the basis for assessing children's intelligence at school [1]-[9]. Academic demands are increasingly high when the child enters the next level is the child is expected to have been able to read, copywriting from the blackboard with block letters or with letters upright and note what is detected by the teacher [10]. This causes parents and educators to unconsciously stuff children with various worksheets every day outside their limits. The children's intelligence in linguistic aspects needs to be improved. The goals of developing linguistic intelligence are to communicate orally and in writing well; to convince others through his language skills; able to remember and memorize information; and able to explain the language itself [11]-[13].

Children's linguistic intelligence will improve by practicing syllables that are different and pronounced.

Pronunciation is important in speech and understanding. Linguistic intelligence will be better if the child gives meaning to new words, combines new words, and offers statements and questions [14]. All of this is an amalgamation of speech and creative thinking processes. Children also develop their linguistic intelligence if they learn vocabulary that is mastering objects' names and using grammatical rules.

In terms of development, the child enters the golden age [15]. This golden period is marked by the development of the number and function of nerve cells of a child's brain, and each child has the optimal potential if the process of nerve cells and stimulation of the brain is balanced [16]. The right brain more dominates early childhood than the left brain. The right brain can learn languages quickly. Therefore, a small child is considered to have linguistic intelligence (language). Language for children is the language used to convey the desires of the mind, wishes, and other requests for their interests [17].

Language is a means of communication that symbolizes thoughts and feelings to convey meaning or messages to others [18]. Language learning for early childhood is not only for developing intellect but also involves the mechanism of listening to sound and speech [19]. In children aged six years, a neural network for listening to mother tongue has formed. Therefore, children's hearing must be stimulated so that they are good at learning to speak (speaking), recognize words, and read.

Humans in their lives use language to think, listen, speak, read, and write. But the ability to utilize language is not a natural ability, such as breathing and walking. That ability is not carried from birth and mastered by itself but must be learned. Children's linguistic intelligence includes phonological development (recognizing and producing sounds), vocabulary development, semantic development (word meaning), syntactic development (sentence arrangement), and pragmatic development (use of language for communication purposes) [20]. Phonological development in children aged 4-6 years is still not perfect, but almost everything they said can be understood and understood by parents and people around them [21]. The words that are said by children include nouns, verbs, adjectives and function words.

Early childhood needs practice or stimulation of basic language skills, including verbal communication exercises, preliminary reading, and writing exercises to prepare children to develop their abilities [22]. Linguistic intelligence is the ability to use and understand words effectively, both orally and in writing [23]. Children who have linguistic intelligence can argue and convince others through the words that are spoken. In developing linguistic intelligence, teachers should understand children's development to know the children's characteristics and abilities. So, the teacher can choose the right materials, learning resources, and methods and create an exciting and meaningful learning environment in everyday life [10]. Teachers have a significant role in using learning resources

to effectively and individually assist the students in the learning process [24].

Students will be more confident in accepting what is learned when listening (audio), seeing (visual), and doing it (kinesthetic) [25]. Therefore, the media is essential in the learning process. Media are all forms and channels used to communicate messages or information [26]. When associated with learning activities, the media can be interpreted as a communication tool used in the students' learning process [27], [28]. Learning media are all things that can be used to carry messages from the sender to the recipient so that they can stimulate thoughts, feelings, concerns, and interests, as well as students' attention so that the learning process occurs [29].

Alphabet cards can be used to practice spelling smoothly, and cards that contain pictures. It can be used to train students to spell in enriching vocabulary [30]. The method of playing in recognizing letters using card media can prepare and improve children's language skills [31], namely by listening to various sounds, uttering syllables, expanding syllables, and speaking according to grammar.

One of the most meaningful and appropriate learning for early childhood development is through the game. It can generate understanding or provide information, provide fun, and develop imagination in children [32]. Some examples related to the game are guessing game, vocabulary game, digital game, puzzle, and flashcard. Flashcard is a kind of card that contains pictures, text, or symbols to show to students. It is used in the learning process as media through game activity [33]. Flashcard is useful as a medium to improve children's linguistic intelligence and train children to respond as desired. This study's flashcard media characteristics are to present messages or information related to the images on each card showed. The presentation of this information will make it easier for children to remember the message. The combination of pictures and captions makes it easy for children to recognize concepts and know objects' names. The game helps children develop their behavior and character or personality through intellect, physical, and spiritual [34], [35]. If a child learns in a forced condition, it will have a prolonged negative impact on subsequent child development, both psychologically and intellectually [36]. Therefore, this study focuses on increasing linguistic intelligence through the graphic introduction with flashcard media for early childhood.

METHODS

The type of this study is an experimental study with the design as presented in Table 1. The variables in this study affect each other between the independent variable and the dependent variable. Variables are the object of research or what is the focus of research [37]. This study's independent variable is the introduction of grapheme with flashcard media, and the dependent variable is linguistic intelligence. The initial condition of the children being studied needs to be known. This is so that this research is as expected,

namely answering the research problem. Based on our observation, we found the children's linguistic background. Some children could not recognize the letter; most children could not rephrase information; some children could not write down what is heard; and some children could not answer teacher questions.

Linguistic intelligence in children aged 5-6 years (Group B) is the main focus of this study. In these abilities, children are expected to be able to communicate smoothly and correctly, also to sing, read, write, and tell stories. The learning media used in this study are picture cards (flashcards) with syllables or cards with words to teach graphemes (letters) and convey messages in the teaching and learning process.

TABLE I
EXPERIMENTAL RESEARCH DESIGN

Group	Pretest	Treatment	Posttest
E	O ₁	X	O ₂
K	O ₃	-	O ₄

Information:

E = Experimental group

K = Control group

O₁ = Pretest of linguistic intelligence in the experimental group

O₂ = Posttest of linguistic intelligence in the experimental group

O₃ = Pretest of linguistic intelligence the control group

O₄ = Posttest of linguistic intelligence the control group

X = Treatment by utilizing flashcard media

The research design used was a quasi-experiment using the experimental group and the control group. The experimental group is one group that is given special treatment, while the control group is given regular treatment or is not given special treatment as a comparison with the experimental class. Before starting this experimental research, both groups were given a pretest or pretest to measure the initial condition (O). Furthermore, the experimental group was given treatment (X) by providing flashcard media. Meanwhile, the control group was not treated with the media, only regular treatment. After the treatment was completed, the two groups were given another test, namely posttest. The success of the treatment is determined by comparing the pretest and posttest scores. The aim is to make comparisons and to determine the effect of a treatment, namely the use of flashcard media on linguistic intelligence.

This research design has several weaknesses called threats that can interfere with internal validity [38]. These factors are selection, maturity, interaction maturity, testing, statistical regression, instrumentation, and treatment imitation. The threat of selection in which effects occur due to differences in the types of subjects in the control group and the experimental group has been overcome by placing the subject in the control group and the experimental group

randomly to maintain the validity of the experiment. The threat of maturity in a study can be overcome with a short pretest, treatment, and posttest period. The threat of testing that can occur due to the familiarity of the subject with the instrument as a measurement tool is anticipated by using only one pretest and posttest. The threat of statistical regression can affect internal validity when a control group's presence overcomes differences in subject scores quite extreme in the variable. The threat of instrumentation due to the irregularity of the measuring instrument used is anticipated by using a measuring instrument that has sufficient reliability by testing the measuring instrument first.

I. Participants

The testing of linguistic intelligence instruments was carried out at the UNESA Laboratory Kindergarten to group B twice for 45 minutes at each meeting. The first trial was conducted on 5 children consisting of 2 boys and 3 girls. Whereas the second trial was conducted in group B with a total of 9 children, consisting of 5 boys and 4 girls.

Furthermore, for the research subjects, there were 18 students in Group B of Suzan World Kindergarten who were divided into two groups, namely the experimental group (treated) and the control group (not treated). Each group consisted of 9 children namely 5 boys and 4 girls.

II. Data Collection

Research data collection is done through observation using research instruments that have been made researchers in accordance with the research variables. The research instrument is a tool or facility used by researchers in collecting data so that the work is easier, and the results are better, in the sense of being more accurate, complete, and systematic so that it is more easily processed [37]. In this study the research instrument was a rating scale for children's linguistic intelligence. Rating scale is an objective measure that is made periodically which aims to give a picture of appearance especially the appearance of people showing a task that shows the fatigue of the emergence of traits [37].

A variable is an attribute or nature or value of people, objects or activities that have certain variations that are determined by the researcher to be studied and then draw conclusions. In this study, the variables can be divided into two, namely the independent variable (independent variable) and the dependent variable (dependent variable). The independent variable in this study is the introduction of graphemes through flashcard media, and the dependent variable is linguistic intelligence.

Data collection was carried out twice, namely pretest and posttest. Each test was carried out in two groups namely the control group and the experimental group with a duration of 45 minutes for each group and each test. Thus, this research will know the linguistic intelligence acquisition score of each child in the control group and the experimental group

that has been given the treatment in the form of flashcard media. The indicator of linguistic intelligence is presented in Table II.

TABLE II
LINGUISTIC INTELLIGENCE RESEARCH INSTRUMENTS

Aspect	Indicator
1. Verbal	a. Read by spelling the writing b. Pronounce the word accurately c. Enjoy reading various types of reading d. Read effectively e. Enjoy talking or discussing f. Able to speak for long periods g. Enjoy telling stories or telling stories h. Able to communicate with other people
2. Writing	a. Have a good vocabulary b. Write better than children his age c. Be able to summarize the story d. Enjoy writing words e. Able to write words and sentences that other people say f. Write effectively and according to grammar g. Enjoys playing with words

III. Data Analysis

Analysis of the data in this study was to determine the child's initial ability in linguistic intelligence or before being given a pretest and after being treated using a flashcard in introducing grapheme or letters (posttest). Before carrying out data analysis, first test the hypothesis by comparing the average results of pretest and posttest linguistic intelligence in children. To test the hypothesis descriptive data analysis is used by comparing the mean pretest and posttest values. Rating or score on the pretest and posttest is done using a rating scale.

IV. Research Procedure

In conducting research, there are procedure steps that are used. There were two activities, namely preparation and implementation. In the preparation, we made procedures for using the flashcard media in the experimental group, experiment trial, research instruments, trial of research instruments, and offering treatment. The instrument (flashcard) was designed to support the learning needs. The construction of flashcard was processed by the following conditions: (1) the letter card is pictorial and has one syllable written so that the child is able to say the words and understand from the same syllable prefix according to the card; (2) the letter cards have three different words and are arranged together so that the child is able to read correctly and differentiate the writing on the card so that the child is able to choose the correct word and pinch it according to the picture; (3) letter cards that have one word written with the aim of the child being able to recognize letters and memorize words so that the child becomes fluent in reading and composing sentences consisting of 3-4 cards according to sentence structure; (4) the letter card has three words, then the child imitates the writing on the right with the aim of training children's literacy (fine motor) so that the child is

able to write correctly; (5) the picture card contains the blank space so that children are able to write words according to the picture; (6) the picture card with the front side picture and on the back side and the front side are words that match the picture. The goal is that the child can mention the characteristics and pictures by telling stories or by demonstrating like a picture and mentioning the words written on the front side of the card; and (7) the letter card on the front side says the words. For implementation, we conducted initial step (divide group B into experimental group and the control group), step for treatment (pretest), and final step (posttest).

RESULTS

The research began with research instrument trials and flashcard media trials. The instruments in this study are about linguistic intelligence using a rating scale. The trial's implementation is subject to several subjects with the same or near characteristics as the characteristics of the research subjects.

I. Instrument Testing

The testing of linguistic intelligence instruments was carried out in the UNESA Laboratory Kindergarten to group B twice for 45 minutes at each meeting. The first trial was conducted on 5 children consisting of 2 boys and 3 girls. The trial results obtained a score of 6 in 2 children, a score of 7 in 2 children, and a score of 9 in 1 child. These results indicate that the measuring instrument has not been sensitive to distinguish between children who have increased language skills with children who lack language skills and children tend to be tenser in learning. So do the addition of behavioral items and increase the number of subjects in the next trial. In the second trial conducted on 9 children consisting of 5 boys and 4 girls. The instrument test results obtained a score of 7 in 1 child, score 8 in 2 children, score 10 in 1 child, score 11 in 1 child, score 12 in 1 child, score 21 in 1 child, score 23 in 1 child, and a score of 28 in 1 child. Based on these results, the measuring instrument has been able to distinguish between increased children's linguistic intelligence and children's linguistic intelligence that has not been increased.

Trials were also conducted on the media of letter cards and companion books in playing the card. The implementation of the letter card trial followed the trial of the research instrument twice in the UNESA Laboratory Kindergarten in group B with 9 children, consisting of 5 boys and 4 girls. Evaluations and input obtained from the trainer or teacher as observers are used to perfect the playing cards media and accompanying modules used. So, in the second trial based on evaluation and input from the trainer or teacher it was found that the card was ready to be used in this study. In the first trial there is an evaluation related to flashcard media, which needs to be considered the level of security and the feasibility of the media. So that researchers improve by laminating all cards and cutting in

such a way that the card ends are not sharp and hurt the child. Then in the second trial, there was no evaluation or input regarding the flashcard so it can be said that the flashcard media was said to be suitable for use in research.

II. Result of Pretest and Posttest

This study includes 5 steps namely determining research subjects, forming experimental and control groups, taking pretest data, giving treatment, and taking posttest data. The population in this study were all TK B students at Suzan World Kindergarten with an age range of 5-6 years. The TK B students were then divided into two groups. Each of groups consisted of 9 people. Pretest was done in each group once with 45 minutes duration. Assessment or score of this pretest is done using a rating scale. The higher the score obtained it is concluded that the higher or increased in children's linguistic intelligence. The results of the pretest showed that the scores obtained by the control group and the experimental group were the same, which was 8.6. Then the experimental group was given treatment by using flashcard media, while the control group was not given any treatment. After that, posttest data retrieval is done once with duration of 45 minutes and is carried out after the research is completed.

After the two groups were given an initial questionnaire (pretest) to measure linguistic intelligence, and the average results were the same, the next step was giving treatment. The treatment was done using flashcard media. The teacher, as a manipulator of the learning process, provides treatment using flashcard media. Researchers act as observers who observe learning directly during the manipulation process. The learning implementation in this study was carried out at the same basic competency and basic competency standards for both the experimental group and the control group. Referring to the research design, the experimental group was treated with flashcard learning media and the control group was not treated with flashcard learning media or remained with previous learning, namely conventional learning (spelling writing on the blackboard). The treatment or treatment was given around 16 meetings. The last stage is giving a posttest to measure linguistic intelligence between the two groups, either given the flashcard media treatment or those not given the treatment or using conventional learning.

Before carrying out data analysis, first, test the hypothesis by comparing the mean and posttest results. Table 3 is a general description of research data after testing the hypothesis. The result of pretest and posttest in the experimental group and the control group is shown in Figure 1 and Figure 2, respectively.

2.	B	L	5	10	K	P	10	11
3.	C	L	9	13	L	L	16	16
4.	D	P	13	20	M	L	5	5
5.	E	L	10	18	N	P	6	5
6.	F	L	9	18	O	P	9	6
7.	G	P	6	12	P	P	10	9
8.	H	P	6	14	Q	L	4	4
9.	I	P	16	25	R	L	6	6
AVERAGE			8.6	15.4	AVERAGE	8.6	8.2	

Information
 S : Subject
 JK : Gender
 L : Male
 P : Woman

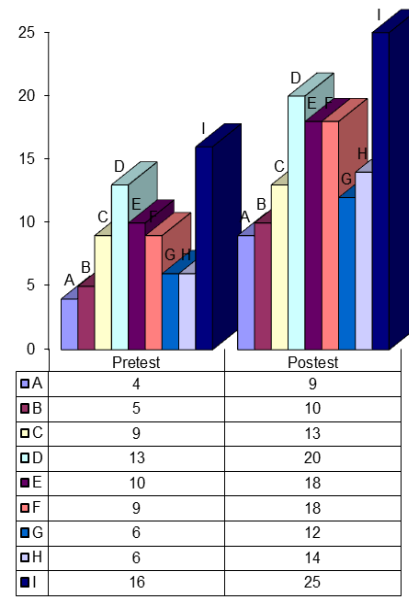


FIGURE 1
 THE RESULT OF PRETEST AND POSTTEST IN THE EXPERIMENTAL GROUP

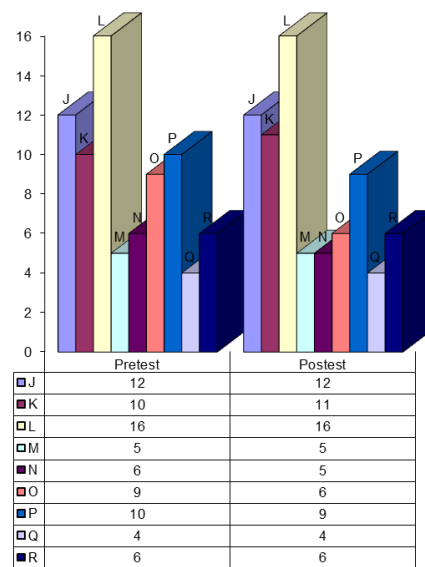


TABLE III
 RESEARCH DATA, EXPERIMENT GROUP AND CONTROL GROUP

NO	Experimental Group		Control Group					
	S	JK	S	JK				
	Pretest	Posttest	Pretest	Posttest				
1.	A	L	4	9	J	P	12	12

FIGURE 2
THE RESULT OF PRETEST AND POSTTEST IN THE CONTROL GROUP

Hypothesis testing shows the differences in language skills in group B children treated through media playing cards and those not treated. So it can be concluded that the media playing cards can improve language skills in children in group B. Table 4 shows that the experimental group and the control group have the same pretest average value of XKE = XKK = 8.6. This means that there are no differences in the results of the pretest or it can be said that all children have the same language intelligence.

TABLE IV
AVERAGE LINGUISTIC INTELLIGENCE OF EXPERIMENTS AND CONTROL GROUPS IN PRETEST AND POSTTEST

Measurement	Group		Difference
	Experiment	Control	
Pretest	8.6	8.6	0
Posttest	15.4	8.2	7.2
Difference	6.8	0.4	

At the posttest, the experimental group experienced an increase in the average value of 15.4. This means that the increase in the average of the experimental group increased quite significantly, namely the difference of 6.8 from the pretest score. Whereas in the control group, the posttest value decreased by 0.4 which obtained an average value of 8.2. So, it can be concluded that the control group that was not treated using card media experienced a change in mean values that were not significantly different. The experimental group that was given media playing with letter cards had an average value of a higher level of language ability than the control group who were not treated using letter card media. Based on these results, the first hypothesis is accepted that there is a difference in the improvement of language skills in group B children who were given media to play letter cards with those not treated in the form of media playing card letters. So, it can be concluded that the flashcard media can be said to be effective because it is able to improve language skills in early childhood, especially in group B at the Suzan World Kindergarten, Surabaya.

Validation and reliability were carried out on the instruments used in this study. The aim is to determine whether the instrument is suitable for use or not. Researchers validate through expert judgment and use the correlation formula proposed by Pearson, namely Product Moment.

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

Where:

rx_y = correlation coefficient between x and y variables

x = score of each item for each student

y = total score for each sample

N = number of samples

The decision to accept (valid) or invalid items is based on the validity criteria. From the results of these calculations, compared with r table at a significance of 5% with the number of respondents (n). Some items with r count < r table are declared invalid so that the item is omitted. Meanwhile, for all item questions that produce a calculated r value > r table, it can be concluded that the item is valid.

Then proceed with instrument reliability, using Alpha Cronbach. Based on the reliability criteria, the reliability of this instrument is high because it is between 0.60-0.79. So, it can be concluded that this instrument is reliable and can be used for research.

The pretest conducted in the control group and the experimental group aims to determine the level of conditions with respect to the dependent variable. The pretest results are useful for controlling for baseline differences between the two groups. This is done because both groups must be in the same situation. So that both groups were given the same questionnaire.

After both groups have the same condition and have done a pretest, the next step is treatment. The treatment used was through flashcard media to children in the experimental group. The teacher as the perpetrator of the manipulation of the teaching and learning process, namely giving treatment using flashcard media. Meanwhile, the researcher acts as an observer who directly observes the manipulation process. After giving the treatment, the experimental group and the control group were given the same posttest questionnaire as the pretest questionnaire. This test aims to see the achievement of children's linguistic intelligence, whether the results are increasing, equal or decreasing.

After being given treatment and posttest, this study used the t-test formula to test the significance of the difference between the two means from the experimental group and the control group. The degree of freedom of the T-test is db = N - 2. With a significant level of α = 0.05. The test criterion is if tcount > ttable means that H0 is rejected, and if tcount ≤ ttable means that H0 is accepted.

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2} \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}} \quad (2)$$

Based on the results of these calculations, the t-count value of 4.228 is obtained so that the t-table is 2.045. Because tcount > ttable, H0 is rejected. Thus, there is a significant

relationship between children's linguistic intelligence and flashcard media.

This research shows that before being given the treatment of playing card letters between the experimental and control groups, they did not differ in language skills scores. This is indicated by the experimental group's average value and the control group, namely $XKE = XKK = 8.6$. It does not have a difference. So, it can be assumed that both groups have the same language skills.

The results showed that after giving flashcard playing media, it appeared that there were significant differences in children's language skills between the experimental group and the control group. The mean difference was quite striking between the experimental and control groups before and after the letter card playing module's treatment. In the posttest the control group decreased by 0.4. Changes in the mean of this control group did not differ significantly, so it can be concluded that the control group who were not given training in playing card letters did not experience a significant difference in scores. However, the experimental group that was given treatment experienced an increase after being given the flashcard media. So, it was concluded that the treatment by playing flashcard media was effective to improve linguistic intelligence in early childhood.

The increase in linguistic intelligence that occurred in this study can be caused by several factors, including the readiness and activeness of the subject; companion book to play letter cards (flashcard); and treatment providers. The subject of the initial treatment was enthusiastic in participating in learning so that when the teacher started learning there were no difficulties. That is because the subject pays attention to the teacher's explanation by using a pictorial letter card (flashcard) to attract attention and the child better understands the material presented. This finding is in line with the results of the existing studies that reported that card game use can attract students' attention and develop students' deep understanding [39]-[41].

The book is given to the subject as a companion when using pictorial card media so that the subject feels happy and has no difficulty recognizing letters, mentioning and understanding the meaning of a word, reading, and writing and telling something from picture-word writing. It is a method of learning in early childhood, namely learn while playing. Playing card letters is a method that can be used to improve reading skills [42].

In this study, the giver of treatment is a professional judgment that is a teacher. The teacher can invite children to be active in the activities of playing letter cards to improve linguistic intelligence. This is because the trainers have experienced teaching and actively improve their performance in the world of education. Experienced teachers can manage class well [43].

CONCLUSION

Provision of treatment through playing flashcards can develop children's language skills. Play activities with a child's flashcard will develop cognitive thinking to find and search for as many words as possible and understand the meaning of words, writing letters, reading, and making sentences from several words. Children are also able to tell stories by making imaginations that are fantasy.

Through language, oral communication skills can be enhanced by activities such as training children through listening activities, giving responses, giving answers, and other activities as activities in activities to increase linguistic intelligence. This is indicated by the average results of the experimental group measurements, which showed an increase in posttest of 6.8. So, it can be concluded that the provision of flashcard media increases the language skills in group B.

We recommend that educators should be able to find ways that are efficient and effective in increasing children's intelligence. Through this research it can be seen that the flashcard media can maximize early childhood development. Researchers urge that there is a development related to this flashcard media that can optimize all intelligence in children. Not only teachers who play a role in children's linguistic intelligence, but parents are also required to be creative in developing flashcards in developing all children's intelligence. Giving a flashcard or stimulation is also done not only once but intensively.

Providing treatment through flashcard media in the introduction of graphemes (letter symbols) can optimize linguistic intelligence in children. Playing with flashcard media will develop children's linguistic intelligence, such as: being able to find and search for as many words as possible and to understand the meaning of words, writing letters, reading, making sentences from several words. Children are also able to tell stories by creating a fantasy imagination.

Linguistic intelligence can be optimized with flashcard media through training children through listening, giving responses, and giving other answers. This is indicated by the results of the average measurement of the experimental group, which increased the posttest of 6.8. So it can be concluded that flashcard media can influence and optimize linguistic intelligence in children.

We recommend that educators be able to find efficient and effective ways to improve children's intelligence. Through this research, it can be seen that flashcard media can optimize intelligence, especially linguistics, in early childhood. For further research, it is essential to develop flashcard media in other intelligences.

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