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The Influence of Audio Flashcard Media on Vocabulary Mastery in Children with Speech Delay Aged Four Years

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Abstract: Speech delays in four-year-old children can have a significant impact on their language development and well-being. This research, therefore, aims to determine the effect of audio flashcard media in improving vocabulary mastery in children with speech delay aged four years. This research used a quantitative approach with a single subject research (SSR) type of research and employed an A-B research design. The subject in this study was a four-year-old child with speech delay who was identified as not having mastered much vocabulary well. Data on vocabulary mastery abilities in the baseline and intervention phases were obtained through observation. Data analysis used descriptions of images obtained from graphic analysis by paying attention to changes in levels or trends. Changes in the stability of the intervention phase (B) and baseline phase (A) exhibited changes in the stability trend from variable to variable. The change in the level of the baseline phase condition (A) in the last session (82.5) and the first session of the intervention condition (B) was (70). It can be concluded that the change in level in the intervention phase (B) to the baseline phase (A) was an increase (+12.5). The research results indicate that changes in levels or trends have increased. This denotes that providing learning using audio flashcard media influences children's ability to master vocabulary, and the use of audio flashcard media can be an effective method in helping children who experience speech delays to develop their vocabulary.

Keywords: Speech Delay, SSR, Media Audio Flashcard, Aged Four Years

Abstrak: *Keterlambatan bicara pada anak usia 4 tahun dapat memiliki dampak signifikan pada perkembangan bahasa dan kesejahteraan mereka. Penelitian ini bertujuan untuk mengetahui pengaruh media audio flashcard dalam meningkatkan penguasaan kosakata pada anak speech delay usia 4 tahun. Penelitian ini menggunakan pendekatan kuantitatif dengan jenis penelitian single subject research (SSR) dan menggunakan desain penelitian A-B. Subjek dalam penelitian ini adalah 1 anak speech delay usia 4 tahun yang teridentifikasi belum banyak menguasai kosakata dengan baik. Data kemampuan penguasaan kosakata fase baseline dan fase intervensi diperoleh melalui observasi. Analisa data menggunakan deskripsi gambaran yang diperoleh dari analisa grafik dengan memperhatikan perubahan level atau trend. Perubahan stabilitas fase intervensi (B) dan fase baseline (A) menunjukkan perubahan kecenderungan stabilitas adalah variabel ke variabel. Perubahan level kondisi fase baseline (A) pada sesi terakhir (82.5) dan sesi pertama kondisi intervensi (B) yaitu (70). Dapat disimpulkan perubahan level pada fase intervensi (B) ke fase baseline (A) meningkat (+12,5). Hasil penelitian menunjukkan perubahan level atau trend mengalami peningkatan. Hal ini menunjukkan bahwa pemberian pembelajaran menggunakan media audio flashcard mempengaruhi kemampuan anak dalam penguasaan kosakata serta penggunaan media audio flashcard ini dapat menjadi metode yang efektif dalam membantu anak-anak yang mengalami keterlambatan bicara untuk mengembangkan kosakata mereka.*

Kata Kunci: Potensi, Kecerdasan Buatan, Bahan Ajar Interaktif, Guru SD

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INTRODUCTION

Although the development of speech and verbal communication skills is essential in everyday life, not all children experience it smoothly. Some people may experience challenges in speaking, which is called "speech delay." This refers to a delay in reaching language and speech development milestones appropriate to their age. Children with speech delays have difficulty understanding words, organizing sentences, or pronouncing sounds. Speech is, in fact, a form of language with articulations and words for meaning. Children who communicate will build good social relationships with their friends (Zainatuddar, 2015).

This is known through milestones in speech development, according to Piaget (1954), in which at the age of two years, some children begin to use single words in communication, such as "mama" and "papa." However, at the age of four years, children with speech delay are only starting to reach this stage and say limited single words, slightly behind in the use of short sentences. This is the basis for research on the use of interesting and effective teaching aids according to children's interests (Nugroho, Nurkamto, and Sulistyowati, 2012).

Stephen (2011) stated that one medium that can attract children's attention is using concrete or real media to increase children's thinking power for vocabulary recognition, one of which is by using audio flashcard media. Sadiman et al. (2009) argue that audio media is a medium for conveying messages that will be conveyed in the form of auditory symbols, both verbal (in words or spoken language) and non-verbal.

Based on existing research findings, audio flashcard media on vocabulary mastery in children with speech delay aged four years has a significant impact. Flashcard audio media can provide a strong picture audio stimulus for children to strengthen and expand their vocabulary. In light of this description, it can be concluded that audio flashcard media is a simple but very useful medium for displaying and practicing vocabulary and is a form of non-print intermediary or introduction that can be used to convey messages from educators to students by playing or listening directly so that students are able to master certain competencies from the learning activities carried out.

As Arsyad (2013) defined, flashcards are small cards containing images, text, or symbols that can remind and guide students to something related to the image. This opinion implies that flashcards are cards that contain pictures and writing so that students can easily digest the writing with the help of pictures. Similar research has been conducted by Azzahra (2023) entitled "Flashcard Media for Acquiring English Vocabulary in Elementary Schools." The research is experimental research using a One Group Pretest Posttest research design, and the research results revealed the influence of the use of flashcard media on English vocabulary mastery, which is known to have a mean pretest score of 60.00 and a mean posttest score of 82.50. Based on this value, there was an increase after carrying out treatment utilizing flashcard media.

According to several opinions from the experts above, it can be concluded that audio flashcard media is a learning media that uses sound or audio recordings to help strengthen understanding and recall of information. This media is usually used in the vocabulary learning process, where each card contains words or phrases in the target language along with their pronunciation. Each card on the audio flashcard media has written text that represents words or phrases in the target language. When the subject studies the flashcard, the subject can listen to the voice recording while looking at the writing on the card. This media is highly effective because the use of direct hearing helps strengthen the connection between the pronunciation and meaning of words.

This can improve the subject's ability to recognize and remember vocabulary and stimulate fluency in speaking. Apart from that, flashcard audio media can be easily accessed and used anytime and anywhere. This provides flexibility in its use as a learning aid at home, at school, or even while traveling. This flexibility allows parents and educators to be actively involved in helping children with speech delays develop their vocabulary without being limited by time or location. Flashcard media also creates a very fun atmosphere and motivates children. In addition, the use of audio flashcard media can provide support for independent learning for children with speech delay. They can use this media with teacher guidance; after receiving guidance, children know how to use audio flashcard media, thus enabling them to develop independence in the learning process.

Based on these problems, in this research, children's vocabulary mastery is expected to increase with the presence of audio flashcard media. Using audio flashcard media can make it easier for children to master vocabulary in teaching and learning activities. The problem is addressed by conducting research titled "The Influence of Audio Flashcard Media on Vocabulary Mastery in Children with Speech Delay Aged Four Years."

RESEARCH METHODS

The type of research used was Single Subject Research (SSR). The design form employed was A-B, where A serves as the baseline phase (initial conditions), while B is the intervention phase (treatment). "SSR research is used for single subjects, which can be carried out on a subject or a group of subjects in its implementation," according to Sunanto (2005, p. 2). Meanwhile, a research subject is used as material or a target. In this study, the subject was a child with speech delay aged four years whose identity was N and whose gender was female. The child experienced speech delays in mastering vocabulary, causing her to lack skills in speaking and conveying things.

The data analysis technique utilized was analysis within conditions, i.e., analysis carried out in baseline and intervention conditions. Components used to perform analysis under conditions included the following:

1) Determining the length of the condition, namely the amount of data in the condition; Describing the number of sessions in that condition; Determining the length of the interval, indicating the length of the interval.

2) Determining the estimated directional trend. In situations where the amount of data is above and below the same line, the projected trend direction is represented by a straight line that spans all the data.

3) Determining the trend of stability, showing the degree of homogeneity of data in conditions. The level of stability can be determined by calculating the number of data within the range of 50% above and below the mean. Determining the stability tendency, in this case, used a stability criterion of 15%, so the calculation is as follows: Calculate the mean level by looking at the data at the baseline, then add it up = result.

4) Determining a trend, where the data trail is a change from one data to another in a condition with three possibilities: stagnant, increasing, or decreasing. In this case, determining the stability tendency employed a stability criterion of 15%.

5) Determining the level of stability and range is the level of data change indicating the magnitude of data change between two words. The rate of change is the difference between the first and the second data.

6) Determining the P-level change indicates how much data changes occur in one condition. Determining the level of change is by marking the first data (day 1) and last data (day 5) in the baseline phase (A). Calculate between the two data and determine whether the direction is increasing or decreasing. Put a sign (+) if it improves, (-) if it gets worse, and (=) if there is no change (stagnan).

Moreover, analysis between conditions was carried out to see the differences between the baseline and intervention phases, with the components used including:

1) Determining the number of variables. In the recorded data, the variable to be changed from baseline (A) to intervention (B) was 1. Determining changes in directional trends. The change in directional trend is shown in the graph between the baseline and intervention conditions. Determining changes in directional tendencies was done by taking data into account in the analysis under the conditions above.

2) Determining changes in stability trends. Stability trend change is data stability, which shows the level of stability of change in a series of data. Determining changes in stability tendencies was done by looking at the stability tendencies in the baseline (A) and intervention (B) phases in the analysis summary in the conditions and entering it in the format.

3) Determining the level of change. Level changes indicate how much data is changed. The level of change was determined by determining data points in the baseline condition (A) in the last session and the first session in the intervention condition (B) = results.

4) Determining the overlap of baseline and intervention conditions, where data overlap indicates the consequences of the same data conditions in both conditions. Determining the overlap of data in the baseline condition (A) with the intervention (B) was done by looking again at the lower and upper limits in the baseline condition.

Table 1. Research instrument

Aspect	Indicator	Score			
		4	3	2	1
Imitating	1. Children are able to imitate the vocabulary of a comb.				
	2. Children are able to imitate toothbrush vocabulary.				
	3. Children are able to imitate towel vocabulary.				
	4. Children are able to imitate the sofa vocabulary.				
	5. Children are able to imitate the vocabulary of bath soap.				
Labeling	1. Children are able to label comb vocabulary.				
	2. Children are able to label toothbrush vocabulary.				
	3. Children are able to label towel vocabulary.				
	4. Children are able to label sofa vocabulary.				

5. Children are able to label the vocabulary of bath soap.

Information:

Score 4: Very Good (Able to imitate without help and commands)

Score 3: Good (Able to imitate but is wrong once)

Score 2: Sufficient (Able to answer after assistance and commands)

Score 1: No talking

RESULTS AND DISCUSSION

Research in baseline conditions was carried out five times. The data obtained in these baseline conditions can be observed in Table 2 below.

Table 2. Data Obtained in Baseline Conditions

Session	Word Count	Acquisition Score	Maximum Score	Percentage
1	5	28	40	70%
2	5	30	40	75%
3	5	33	40	82.5%
4	5	34	40	85%
5	5	33	40	82.5%

The table presents that the baseline phase (A), which was carried out in five sessions, obtained the lowest score of 28, with a percentage of 70%, and the highest score of 34, with a percentage of 85%. In accordance with the data in Table 2 above, it can be depicted in Figure 1 below.

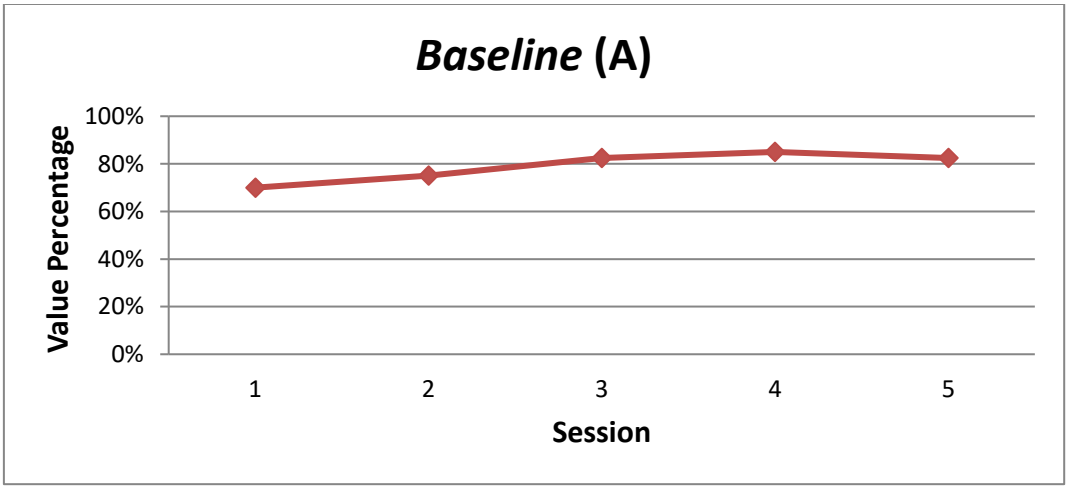


Figure 1. Baseline Phase (A)

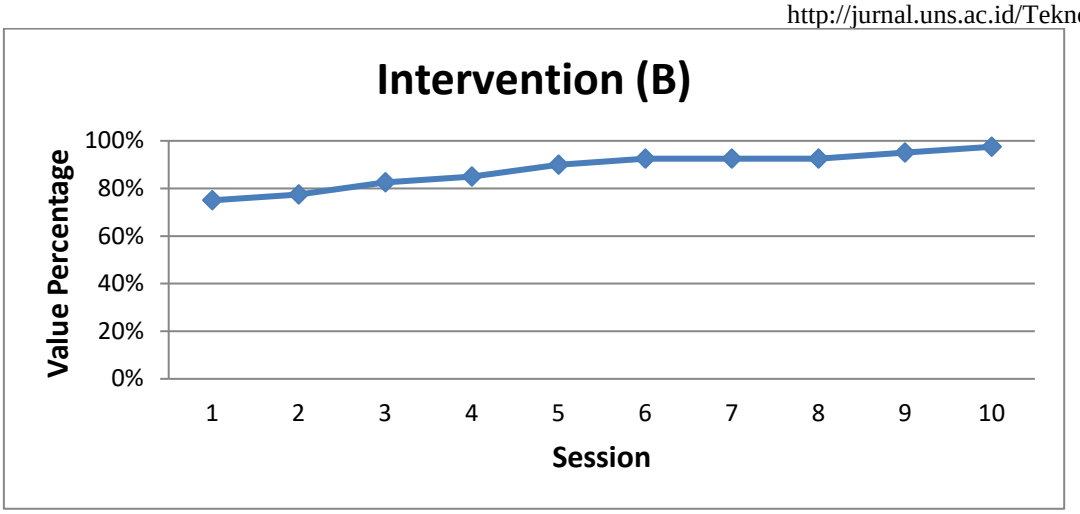


Figure 2. Intervention Result Phase (B)

Meanwhile, in the intervention phase, the researchers obtained detailed data, which can be seen in Table 3 below.

Table 3. Data Obtained in the Intervention Phase

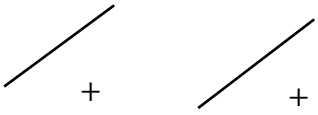
Session	Number of Questions	Acquisition Score	Maximum Score	Percentage
1	5	30	40	75%
2	5	31	40	77.5%
3	5	33	40	82.5%
4	5	34	40	85%
5	5	36	40	90%
6	5	37	40	92.5%
7	5	37	40	92.5%
8	5	37	40	92.5%
9	5	38	40	95%
10	5	39	40	97.5%

Table 4. Within-condition component analysis

Condition	A/1	B/2
Condition length	5	10
Estimation of directional tendencies	/	/
Stability tendencies	Variable (60%)	Variable (60%)
Data trace trends	/	/
Stability level and range	Variable 70-85	Variable 75-97.5

Level of change	$\frac{85-70}{(+15)}$	$\frac{97.5-75}{(+22.5)}$

Table 5. Component analysis between conditions

Condition	**B1/A1**
Comparison of conditions	2:1
Number of variables	1
Changes in direction and their effects	
Stability changes	Variable to variable
Level of change	82.5-75 (+7.5)
Overlap	(3:10) x 100 30%

In speaking, children with speech delay usually have difficulty expressing desires or feelings to other people, and a child is considered to have a speech delay when he has communication skills below that of children of his age (Fauzia et al., 2020). One approach that can be employed is the use of audio flashcard media. Mohamadkhani (2013) concluded that audio media has influenced learning, especially in understanding and correctly identifying the meaning of the words of native speakers (narrators) for children.

When observing a four-year-old subject on Jalan Letjen Suprapto XVIII No 45 Jember, the researchers observed vocabulary mastery in the subject. From the results of observations, it was found that the teacher taught imitating and labeling the subject without using special methods to deal with slow speech. After the data were obtained, the researchers wanted to conduct research to improve vocabulary mastery skills using audio flashcard media in the child with speech delays.

The child studied, named N, was a four-year-old child with a speech delay. N did not have much vocabulary yet. Here, the use of audio flashcard media can provide an audio stimulus that helps the subject associate sounds and the right words. Apart from that, audio flashcard media can increase subjects' interest in learning vocabulary because it uses technology that is interesting to them.

This research was conducted over 15 sessions, comprising five sessions in the baseline phase (A) and ten sessions in the intervention phase (B), with each session conducted on active days from 09.00 to 10.00. The baseline phase (A) got 70%, 75%, 82.5%, 85%, and 82.5%, while in the intervention phase (B), 75%, 77.5%, 82.5%, 85%, 90%, 92.5%, 92.5%, 92.5%, 95%, and 97.5% were

obtained. The lowest value in the baseline phase (A) was 70%, and the highest percentage value in the baseline phase was 85%.

Meanwhile, the obstacle faced by the researchers when carrying out the research was that N had difficulty maintaining her interest in repetitive activities in the fifth session of the baseline phase. Therefore, the researchers used several strategies that could help maintain the subject's interest. An example is a variation in flashcard presentations using various interesting images or sounds. The researchers could also consider activity-based activities that could make subjects more engaged and excited. During learning, subjects said the word comb more often than other words because combs were often used for her hair in her daily activities.

Then, the researchers carried out the data collection process using the prepared word instruments. N got a score of 70% at the end of the first session. In the second session, N experienced the influence of vocabulary mastery, which resulted in her getting a score of 75%. In the next session, N got a score of 82.5%. This made N's score increase to 85% in the fourth phase, and in the final baseline phase, N experienced a slight problem in the vocabulary mastery test because N had difficulty maintaining her interest in repetitive activities, resulting in a score of 82.5%. Throughout the intervention session, N experienced the influence periodically. The researchers also set conditions so that N's focus could be maintained until the end of the session, and she could get the maximum score. The influence of N in the intervention began after instructions were given regarding the use of audio flashcard media.

Within-condition analysis of condition length was five sessions in the baseline phase (A) and ten sessions in the intervention phase (B). In the estimation of the directional trend in vocabulary mastery, it tended to increase periodically in the intervention sessions. The stability trend of the baseline phase had a stability range of 12.75, a mean level of 79, an upper limit of 85, a lower limit of 72, and there were 3 data within the range, so the results obtained in the stability trend were 60%. The trend of trace data in the baseline and intervention phases increased. In addition, the stability level and range of the baseline phase were in variables 70-85, while the intervention phase was in variables 75-97.5. Changes occurred as much as (+15) in the baseline phase and (+22.5) in the intervention phase.

The analysis between conditions included a 2:1 condition comparison. The number of variables in the baseline and intervention phases was 1. Changes in direction and their effects on vocabulary mastery abilities in the intervention phase (B) and baseline phase (A) tended towards (+) or increasing. Changes in the stability of the intervention phase (B) and baseline phase (A) showed that changes in the stability trend were variable to variable. The change in the level of the baseline phase condition (A) in the last session (82.5) and the first session of the intervention condition (B) was (70). Next, both were calculated, and (82.5-70) is marked with a (+) sign if it increases, a sign (-) if it decreases, and a sign (=) if there is no change. Therefore, it can be concluded that the change in level from the intervention phase (B) to the baseline phase (A) increased (+12.5). Apart from that, the overlap percentage was seen from the upper and lower limits of the baseline phase. The upper limit of the baseline was 85, and the lower limit of the baseline phase was 72, while the data points in the intervention phase condition (B) were 3. It can be concluded that an intervention was included in the upper and lower limits of the baseline phase.

CONCLUSIONS AND RECOMMENDATIONS

The research concludes that the use of audio flashcard media influences vocabulary mastery in children with speed delays aged four years. The results of the data analysis confirmed that children who received intervention using audio flashcard media experienced a significant increase of 60% in

vocabulary mastery compared to those who had used audio flashcard media before. Based on this, several recommendations can be considered, as follows: Future researchers can use variations in flashcard content that suit children's needs and interests and consider other factors that can influence children's vocabulary mastery, and parents need to actively involve themselves in interactions with children when using audio flashcard media and set a consistent schedule for using audio flashcard media with children.

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