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Improving Vocabulary Reading Skills with Word Card and Picture Card for Moderate Intellectual Disabilities

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Abstract: Teaching reading functional vocabulary to students with intellectual disability (ID's) is a challenge for teachers in special schools. They face many obstacles in teaching vocabulary which are caused by various factors, especially student characteristics and learning structures that are less practical and tend to be academic. This study aims to measure the effectiveness of using word cards and picture cards to improve vocabulary reading skills in moderate ID's students. The type of research applied is single subject research, with multiple baseline across subject designs. The research subjects were two moderately ID's students in grade 5 and grade 2 SLB-C1 Bhakti Luhur Malang. An instructor and an observer played an important role in this study. The experimental instrument used is Lesson Plan which consists of three units, each teaching two vocabularies. Data analysis is carried out by performing graphical inspections that focus on trend, latency, and level changes. The effectiveness was confirmed by Percentage of All Non-overlapping Data (PAND) in the intervention condition against the baseline-1 condition. The results showed that with the intervention, the target behavior in the form of vocabulary understanding had a trend of grades rising gradually touching a high level of score, and settling at a high level in the baseline-2 condition. The average PAND for subject-1 reached 80.55% (effective), and subject-2 reached 96.67% (very effective).

Keywords: moderate intellectual disability; picture cards and word cards; reading vocabulary skills

INTRODUCTION

In modern society, the ability to read (literacy) is a very important capital for everyone in life. Reading skills are also very important for children who have intellectual disabilities, even though they have significant limitations in cognitive function and adaptive behavior. Intellectual disabilities (ID's) children who have reading skills will increase their social participation, quality of life and self-esteem. However, until now, many studies have shown that many ID's people do not have the ability to read and are even illiterate (Sermier Dessemontet et al., 2019).

Historically, many people were pessimistic about the results of teaching reading to mentally retarded students. In fact, they are not really expected to learn to read. In the last decade, society's expectations for this group of students have changed, where children and adolescents with mental retardation are expected to benefit from reading lessons. This shift in societal expectations has also led to an increasing number of studies investigating effective intervention models to improve early reading and functional reading skills for mentally retarded students (Reichow et al., 2019).

Teaching reading to mentally retarded students in the mild and moderate categories is indeed a continuing challenge in the world of special education. Moderate ID's is commonly referred to as being able to train, but understanding the vocabulary used in everyday life is an important skill to master in life. SLB-C1 teachers face many obstacles in teaching vocabulary to students with moderate ID's, which are caused by various factors, especially student characteristics and learning structures that are less practical and tend to be academic. The use of teaching aids in learning to read is very necessary for mentally retarded students. Teaching

aids should be adapted to the needs and characteristics of mentally retarded students who have difficulty in abstract thinking and weak memory (Fauzia & Kustiawan, 2017).

Observations made by researchers on the learning process of reading vocabulary for moderately ID's students at SLB Bhakti Luhur Malang found that students did not really understand some of the functional vocabulary taught. Two students who are in grade five and grade two, tend to parrot or as far as imitating the vocabulary spoken by the teacher, during the learning process. Teachers who are faced with thematic learning arrangements, often pay less attention to the details of teaching preparation, including the use of learning media. This fact encourages researchers to improve learning (remedial teaching) as an experimental research by using picture cards and word cards as media.

In general, the term mental retardation has been used in the educational environment, especially special education in Indonesia. The term of mental retardation, which is used later in this article, referring to the term intellectual disability, replaces the mention of mental retardation. The positive consequences of using the word intellectual disability are mainly in terms of: a) a change from the concept of disability b) better alignment with professionals in a praxis that focuses on functional behavior; c) provide a logical rationale for providing individual support within a socio-ecological framework; d) non-offensive towards disability or mental impairment; and e) more consistent with international terminology (Schalock et al., 2007).

Piaget's theory of cognitive development described in *"Piagetian's Genetic Approach to Reading and Language Development"* notes that a normal child's cognitive development consists of a sensorimotor stage, (from birth to about 2 years), a pre-operational thinking stage (from about 2 to 7 years), the concrete operational stage (from about 7 to 11-12 years), and the formal operational stage (from about 11-12 to 14 years) (Vida, 1980). In children with intellectual disabilities, mental age will be considered, so that concrete operational stages will also apply to more chronological ages. The use of concrete media, which is represented by picture card media, is one of the theoretical foundations in this research. Furthermore, picture cards as support in learning (scaffolding) were deliberately reduced until students were able to perform reading tasks independently. Instructional strategies such as these have been shown to be effective in achieving direct and explicit learning objectives (Allor et al., 2014).

Interventions or treatments that focus on reading skills will work in almost the same way for students with mental retardation and regular students. Generally, the instruction used to assist students in reading comprehension is that spoken and written language can be broken down and manipulated into units (words, syllables, and letters). Furthermore, to associate these spoken units it can be assisted with pictures used in the teaching process (Reichow et al., 2019). One function of props, such as pictures, are believed to help students in perceiving an object (Fauzia & Kustiawan, 2017).

Several researchers have begun to explore phonics-based approaches to reading interventions for mentally retarded students (Allor et al., 2014; Browder et al., 2012). This approach focuses on teaching students to identify and manipulate phonemes in spoken language and relate them to printed text. The phonics approach means teaching students to make connections between sounds in spoken language and printed letters. The teaching instructions are in the form of decoding (written to spoken) and encoding (oral to written) (Reichow et al., 2019).

Picture cards and word cards are learning media that are familiar to teachers, including teaching early reading and functional reading. Both are an inseparable part as a learning medium. In other words, learning media is an integral part of the whole system and learning process, meaning that learning media is the most influential and decisive element in learning activities. Furthermore, the media is also defined as something that lies in the middle. The

point is an intermediary that connects all parties who need a relationship to occur and distinguishes between communication media and communication aids (Herdianingsih et al., 2019).

Reading comprehension vocabulary can be focused on specially selected words. The words are taught in a certain way, for example, matching words with pictures as an initial understanding. Students also need to find alternative ways to access age-appropriate reading (Ahlgrim-Delzell et al., 2016). In several single case studies, all mentally retarded students were able to read (understand) several words consisting of consonants-vowels and/or consonant-vowel-consonant structures containing several letter-sound relationships after 5 to 23 intervention sessions (Sermier Dessemontet et al., 2019). However, it is important to pay attention to the prerequisites for learning to read, which include physical readiness, perceptual readiness, cognitive and affective readiness, as well as environmental readiness (Christianti, 2015).

METHOD

This study is a small n-experimental study or single subject research (SSR) in order to see the causal relationship between variables, after treatment (Horner et al., 2005; Sunanto et al., 2005). The design applied is multiple baseline across subjects with the aim of measuring changes in vocabulary reading skills using picture cards and word cards for each subject. The measurement of the dependent variable is carried out repeatedly within a certain period. The causal relationship between variables is not first compared between subjects but is compared with oneself under different conditions (Sunanto et al., 2005). The conditions referred to are baseline conditions and intervention conditions. The baseline is the state of the target's behavior in the natural situation prior to the intervention. While the intervention condition is a condition in which a treatment is given, and the target behavior is measured during the treatment. Subjects of this research consist of 2 students.

Table 1. Research subject data

Identity	Subject1	Subject2
Name	AW	MVP
Gender	Female	Male
Birth of Date	April 27th, 2007	May 5th 2009
Grade	5 SLB-C1	2 SLB-C1
IQ	43	36
Address	Jln. Terusan Dieng No. 40 Malang	

The procedure of this research includes: 1) Baseline-1 phase, assessing the subject's ability to read vocabulary in the untreated condition. The assessment is carried out using an assessment sheet, based on a predetermined value scale, which is a range of 1-5. At this stage an assessment is carried out with the aim of obtaining stable reading skills for each vocabulary; 2) Intervention Phase, namely giving treatment using experimental instruments. The intervention was carried out as a treatment session according to the individual research setting, where each session lasted 35 minutes. For each treatment session, each subject is observed and given an assessment, based on the score scale that has been set in the scoring sheet, which ranges from 1-5; 3) Baseline-2, assessing (again) vocabulary reading skills after the intervention to see and state whether the achievements in the intervention phase changed or remained the same.

The intervention instrument was the Lesson Plan (LP) to read vocabulary using picture cards and word cards. This instrument has been declared valid with a score of 4.4 (scale 1-5) by two experts, namely *Orthopedagog* and Master of Psychology. The LP consists of 3 units,

each containing two vocabularies. Each vocabulary is equipped with a picture card and a word card. Vocabulary as an intervention material was taken from Indonesian language subjects which based on the assessment, and the assessment carried out by the class teacher stated that the two subjects had not understood it. The vocabulary materials in question are the words "head" and "hand" (for LP-A), "table" and "pencil" (for LP-B), "yard" and "flag" (for LP-C).

Data analysis was carried out by graphical visual inspection. The graphic in question is a conversion of research data in the form of a line polygon diagram. This graphical visual analysis was carried out on each subject, in conditions and between conditions that included trend (tendency in the direction of the data trail), latency (time required session), level change (change in score level) (Jhangiani et al., 2019) and the effectiveness of the intervention being measured. using the Percentage of All Non-overlapping Data (PAND) (Scruggs & Mastropieri, 2015). PAND is all data points in the intervention condition that do not overlap with all data points in the baseline-1 condition, divided by the number of data points in the intervention condition, and multiplied by 100%. If the score is > 90%, the intervention is considered very effective, 90% 70% effective, 70% 50% questionable, and <50% ineffective (Olive & Franco, 2008).

RESULT AND DISCUSSION

Result(s)

Lesson Plan A

Based on Graph 1, the trend (the direction of the research data) in the baseline-1 condition is flat (stable) for subject-1, and fluctuating for subject-2, but still at a low level for both head and hand vocabulary. In the intervention condition, although the track data fluctuated but had an upward trend (indicated by the accumulative line of exponential points), even subject-1 reached the maximum score at the end of the intervention session for both vocabularies. Meanwhile, subject-2 reached the maximum score for hand word only. Gradual score achievement shows that picture cards and word cards work trendily, that is, it takes time to have an impact on the expected behaviour, namely the ability to read vocabulary with high scores.

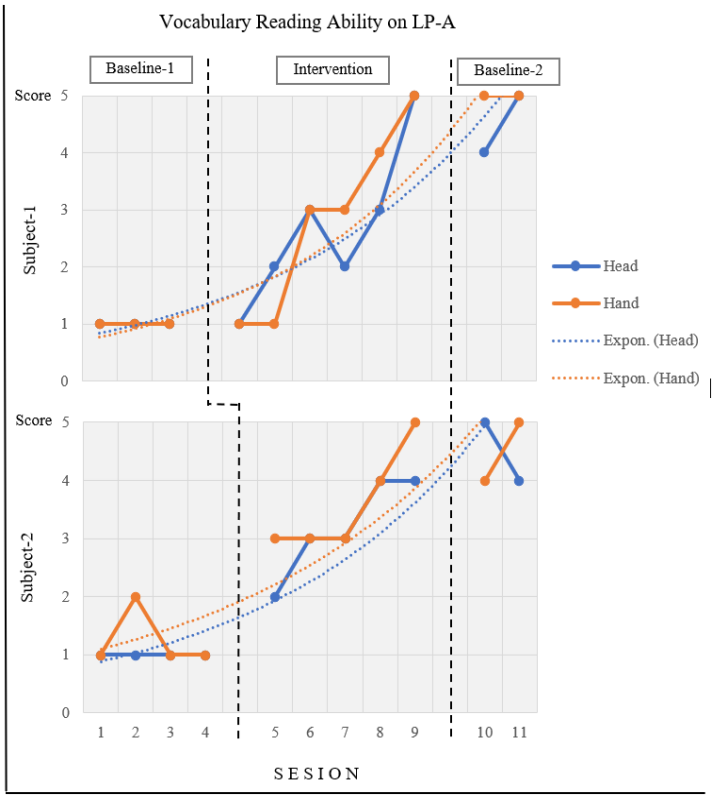

Figure 1. The ability to read the vocabulary of subject-1 and subject-2 on Lesson Plan-A

In the baseline-2 condition, the data traces of the two vocabularies were fluctuating at the high score level for both subjects. This means that even without further intervention, the ability to read head and hand vocabulary can be maintained. Level change by calculating the difference in the average score in the baseline-2 and baseline-1 conditions and the effectiveness of the intervention based on the PAND are presented in the Table 2: Changes in Score Levels, Percentage of Non-Overlapping Data and Effectiveness of Interventions.

Table 2. Changes in Score Levels, Percentage of Non-Overlapping Data & Effectiveness of Interventions

	Vocabs	Average Score Baseline-1	Average Score Baseline-2	Level Change	PAND (%)	Effectiveness
Subject1	Head	(1+1+1)/3 = 1,0	(4+5)/2 = 4,5	4,5 - 1,0 = 3,5	5/6 = 83,3	Effective
	Hand	(1+1+1)/3 = 1,0	(5+5)/2 = 5,0	5,0 - 1,0 = 4,0	4/6 = 66,7	Questionable
Subject2	Head	(1+1+1+1)/4 = 1,0	(5+4)/2 = 4,5	4,5 - 1,0 = 3,5	5/5= 100	Very Effective
	Hand	(1+2+1+1)/4 = 1,3	(4+5)/2 = 4,5	4,5 - 1,3 = 3,2	5/5= 100	Very Effective

Lesson Plan-B

Based on graph 2, the trend or direction of the research data in the baseline-1 condition is fluctuating in pencil words and stable in table words for subject-1; while subject-2, has a horizontal track record for both vocabularies.

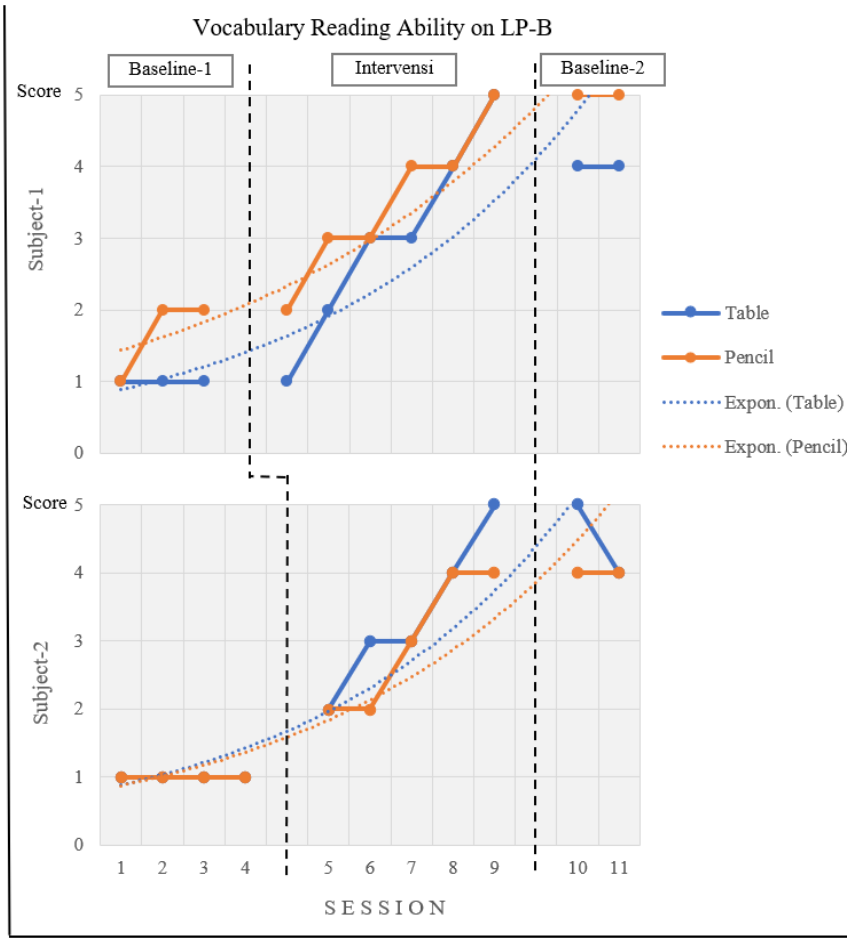

Figure 2. The ability to read the vocabulary of subject-1 and subject-2 on LP-B

In the baseline-1 condition, it is clear from graph 2 that the data points achieved are still at a low level, which indicates that intervention is indeed needed. Entering the intervention condition, although the trace trend (indicated by the exponential dotted line), even at the end of the intervention session, subject-1 reached the maximum score for both vocabularies, while subject-2 reached the maximum score for the word table, while for the word of pencil only recorded a score of 4 points. The data trail that increases from session to session towards the expected behavior shows that the improvement model for teaching reading using picture cards and word cards works in trend mode, which requires several treatments so that the impact of vocabulary reading skills gets a high score.

In the baseline-2 condition, the data traces of the two vocabularies were stagnant at the high score level for subject-1 and fluctuating at the high score level for subject-2. That is, even though the treatment is no longer given, the ability to read table and pencil vocabulary can be maintained at a high level of ability. Changes in levels calculated by calculating the difference in the average score in the baseline-2 and baseline-1 conditions and the effectiveness of the intervention based on the percentage of non-overlapping data (PAND) are presented in the Table 3.

Table 3. Changes in Score Levels, Percentage of Non-Overlapping Data & Effectiveness of Interventions

	Vocabs	Average Score Baseline-1	Average Score Baseline-2	Level Change	PAND (%)	Effectiveness
Subject1	Table	(1+1+1)/3 = 1,0	(4+4)/2 = 4,0	4,0 - 1,0 = 3,0	5/6 = 83,3	Effective

	Pencil	(1+2+2)/3 = 1,7	(5+5)/2 = 5,0	5,0 - 1,7 = 3,3	5/6 = 83,3	Effective
Subject2	Table	(1+1+1+1)/4 = 1,0	(5+4)/2 = 4,5	4,5 - 1,0 = 3,5	5/5 = 100	Very Effective
	Pencil	(1+1+1+1)/4 = 1,0	(4+4)/2 = 4,0	4,0 - 1,0 = 3,0	5/5 = 100	Very Effective

Lesson Plan-C

Based on graph 3, the trend or direction of the research data in the baseline-1 condition is fluctuating on the word page for subject-1 and stable horizontally on the word flag. Meanwhile, subject-2 has a stable record for the word yard, but on the contrary it fluctuates in the word flag. In the baseline-1 condition it can be seen from graph 3 that the record of data points achieved by the two subjects is still at a low level, which indicates that there is a need for immediate treatment. Entering the intervention condition, the data trail appears to be increasing from session to session, although the increase depicted is not stable, but fluctuates. The description of the trend of the data direction from the baseline-1 condition through the intervention condition to the baseline-2 condition is shown by a dotted exponent line for the two vocabularies. At the end of the intervention session, both subjects achieved maximum scores on the flag vocabulary. Meanwhile, the word yard only achieved a score of 4 points.

The data trail that has increased from session to session towards the maximum score shows that the improvement model for teaching reading using picture cards and word cards has a trend changeability, which requires several treatment sessions so that the impact of vocabulary reading skills gets a high score. In the baseline-2 condition, both subjects had the same track record of data, where the word yard remained at a score of 4, while the word flag was able to reach its maximum score again as it had been at the end of the intervention session. In other words, even though the intervention was no longer given, the ability to read the vocabulary of the yard and flag could be maintained at a high level of ability or understood by both subjects. Changes in levels calculated by calculating the difference in the average score in the baseline-2 and baseline-1 conditions and the effectiveness of the intervention based on the percentage of data that do not overlap are presented in the Table 4.

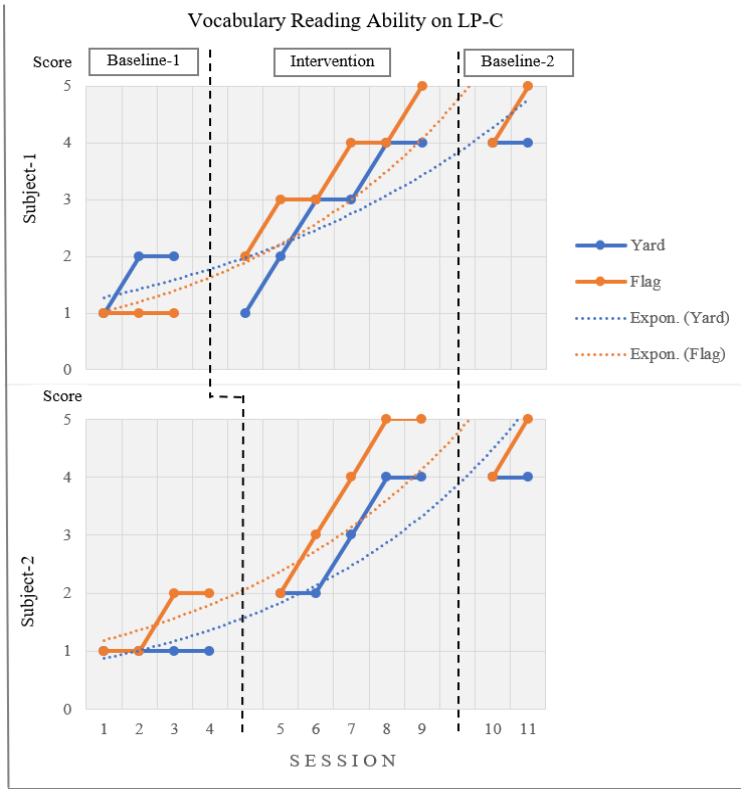

Figure 3. The ability to read the vocabulary of subject-1 and subject-2 on LP-C

Table 4. Changes in Score Levels, Percentage of Non-Overlapping Data & Effectiveness of Interventions

	Vocabs	Average Score Baseline-1	Average Score Baseline-2	Level Change	PAND (%)	Effectiveness
Subject1	Yard	(1+2+2)/3 = 1,7	(4+4)/2 = 4,0	4,0 - 1,7 = 2,3	4/6 = 66,7	Questionable
	Flag	(1+1+1)/3 = 1,0	(4+5)/2 = 4,5	4,5 - 1,0 = 3,5	6/6 = 83,3	Effective
Subject2	Yard	(1+1+1+1)/4 = 1,0	(4+4)/2 = 4,0	4,0 - 1,0 = 3,0	5/5 = 100	Very Effective
	Flag	(1+1+2+2)/4 = 1,5	(4+5)/2 = 4,5	4,5 - 1,5 = 3,0	4/5 = 80,0	Effective

Discussion(s)

Teaching reading that involves cognitive functions to students who have intellectual disability is a challenge and effort that must be taken seriously and continuously. Therefore, it is very important for teachers at SLB-C1 to seek various ways, especially the provision of teaching aids or media that will help students to perceive an object or reading material (Fauzia & Kustiawan, 2017; Reichow et al., 2019). Based on graph 1 and table 2 which are presented to discuss the results of the research on LP-A for the two subjects above, it is known that the change in the score level from the baseline-1 phase to the baseline-2 phase reached a score point between 3.25 to 4.0 from the range of score 1-5. The change in the score level indicated that the intervention using word cards and picture cards improved the subject's understanding of reading vocabulary. This is very relevant to the results of research with structured teaching steps by utilizing picture cards and word cards in improving head and hand vocabulary teaching with a success effectiveness range between 66.7% to 100%.

Learning media in the form of picture cards and word cards which are often seen as irrelevant, if applied directly and explicitly, have proven to be effective and even very effective in achieving learning objectives, to lead students with moderate intellectually disabilities to be able to understand the words table and pencil, which previously had always

experienced failure. Agree with what was conveyed by Allor et al., (2014), that the function of picture cards as support in learning (scaffolding) must be gradually reduced until students are able to perform reading tasks independently. The success of using picture cards and word cards is confirmed by the results of a single case study, all ID's students are able to read several words consisting of consonants-vowels and/or consonant-vowel-consonant structures containing several sound-letter linkages after 5 to 5 years, 23 intervention sessions (Sermier Dessemontet et al., 2019).

The results of the study that applied the Lesson Plan (LP) with vocabulary of yard and flag, had almost the same pattern as the two previous LP. These three teaching improvement models rely on learning media, because researchers realize that learning media is an integral part of the whole system and learning process, meaning that learning media is the most influential and decisive element in learning activities (Herdianingsih et al., 2019). In essence, improving teaching reading vocabulary for students with moderate mental retardation requires the availability of teaching aids, as suggested by Fauzia & Kustiawan, (2017) where these teaching aids must be adapted to the needs and characteristics of mentally retarded students who have difficulty in abstract thinking and weak memory. The fact that this experimental research shows effective results cannot be separated from the importance of educators' understanding that learning should pay attention to various readiness, as stated by Christianti (2015) including physical and environmental readiness.

CONCLUSSION

The use of picture cards and word cards has proven to be effective in improving vocabulary reading skills for moderate intellectual disability students. The effectiveness is based on the calculation of the percentage of non-overlapping data (PAND) which is in the range of 66.7 to 100 percent. The PAND achievements of each word by Subject-1 are: head (83.3), hand (66.7), table (83.3), pencil (83.3), yard (66.7), flag (100). The average is 80.55% (effective). Meanwhile, Subject-2 has achievements: head (100), hand (100), table (100), pencil (100), yard (100), flag (80). The average is 96.67% (very effective).

Furthermore, in the baseline-2 condition where no intervention was given, the scores achieved by the two Subjects were at a high level, namely at scores of 4 and 5. In other words, the intervention that was applied had permanent results.

SUGGESTION

Based on the results of research that has proven to be effective, the researchers suggest to teachers who teach students with moderate intellectual disabilities to use word cards and picture cards to teach vocabulary reading. Teachers are also advised to use more pictures (varied) that have the same meaning, as it will help students have a better understanding.

For further researchers, the use of word cards and picture cards can be used for different types of intellectual disabilities. Future researchers can also apply the use of word cards and picture cards to a wider range of research subjects. Research using word cards and picture cards is also recommended to be applied to a larger number of Subjects.

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