

# EFFECTIVENESS OF INTEGRATED SOUND-WORD METHOD FOR READING IN CHILDREN WITH AUTISM

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## Abstract

The purpose of this research is to seek the effectiveness of Integrated Sound-Word Method (ISWM) for reading in children with autism, especially KVKV syllable reading. Thus, ISWM begins with the introduction of basic words and extends to simple sentences in acquiring language in the aspect of phonology, semantic and syntax. The study is a single subject experimental design research in the qualitative mode using instruments to collect data. The first phase presents the predicted outcome and baseline of the subjects. The second phase observes the ISWM effect. Finally, the intervention is withdrawn in this third phase, allowing for verification of baseline statement. There are two weeks for each phase and three sessions of intervention will be conducted for each week. Purposive sampling is made according to the diagnostic criteria for autistic disorder. The qualitative data is then analyzed according to language assessment and questionnaire based on the subject's language background, observation and evaluation on reading progress individually, and interview regarding the teacher's feedback on the implementation of ISWM. The findings indicate that reading skills are the main difficulties faced by children with autism. The study produces marked improvement in reading performance in boys with autism whilst girls with autism show less improvement in their acquisition of reading skills. In summary, the study has proven the effectiveness of ISWM in improving reading skills among children with autism with regards to words, phrases, and sentences.

**Keywords:** Integrated Sound-Word Method, Reading, Children with Autism

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## INTRODUCTION

Learning disability is associated with semantic-pragmatic disorder which affects language and comprehension development, hence performance Intelligent Quotient (IQ). According to Paramalingam (2001), "Specific semantic-pragmatic disorder" is a term used for a child who is not autistic but presents with poor language development. This impairment becomes increasingly obvious as a child learns to speak and express in sentences (Paramalingam, 2001). Along the line, Botting and Conti-Ramsden (1999) believe that a child could have semantic-pragmatic language disorders without meeting the full criteria for autism. However, children with autism classically show other language impairment such as reversal in word pronunciation and echolalia. On the other hand, those with semantic-pragmatic disorders often have delayed early language development but are able to achieve fluency later on. Speech in semantic-pragmatic disorders is complex with clear articulation. Problems with

comprehension are evident in less structured situations. In addition, children with semantic-pragmatic disorders often do not show extreme social and behavioural abnormalities.

## **BACKGROUND OF STUDY**

The academics at UCL and Goldsmiths delineates that the most common learning disabilities faced are basic reading and language skills. Their research also indicates as high as 80% students with learning disabilities (LD) are also diagnosed with reading problems (Khadijah Rohani, 2014). Curriculum for All (NCC, 1989) is the blueprint curriculum for students with special educational needs. Hence, the main emphasis of literacy skills acquisition is functionally useful and achievable level of language skills for children with LD. Better reading skills will then translate into higher achievement in speech and language skills, auditory perceptual skills and working memory function. Autism remains one of the most common illnesses contributing towards poor literacy rates in special education integrated programmes. Nevertheless, Denton (2012) demonstrates the effectiveness of early intervention to alleviate or prevent reading difficulties. Furthermore, several models have been proposed to look into specific teaching methods effective for children with autism. These methods utilise augmentative and alternative communication especially facial expression and brain activity to interpret the current state of emotion of an autism person (Mazzei, 2009). However, there is still a lack of evidence in the area of reading skills in this group with special needs. Therefore, this research aims to illustrate and emphasize the importance of ISWM on reading skills among children with autism.

## **PURPOSE OF STUDY**

The purposes of the study can be formulated to achieve the following objectives:

1. To profile the background of samples to determine the strength and weakness in Integrated Sound-Word Method.
2. To identify reading skills improvement in boys with Autism after implementing Integrated Sound-Word Method.
3. To identify reading skills improvement in girls with Autism after implementing Integrated Sound-Word Method.

## **METHODOLOGY**

An experimental research using single-subject design (A-B-A) was used to identify the improvement of reading skills in children with Autism implementing ISWM. Koegel (2006) emphasized A-B-A design with a high recommendation on developmental intervention such as language treatment. The first phase (A) presents the predicted outcome and baseline of the subjects. The second phase (B) observes the ISWM effect. Finally, the intervention is withdrawn in this third phase (A), allowing for verification of baseline statement to confirm the findings. There are two weeks for each phase and three sessions of intervention will be conducted for each week. The frequent sessions in one week are mainly to repeat the readings in order to increase the effectiveness of method implementation, which is supported by Sinno et al. (2013) in promoting language acquisition. The children with autism used in this study are selected by purposive sampling. They are two boys and two girls. They are studying under Special Education Integrated Programme (SEIP) in government primary school in Pahang. They are not Malay students, hence the Malay Language is their second language. Students are provided the explanation in their mother tongue language if needed. This is a qualitative mode study with instruments to collect data. Instruments of this study are pre-language assessment,

questionnaire, evaluation form of observation, and interview protocols. As stated before, the National Institutes of Health in the United State of America (2015) indicates that up to 80% of children with LD have reading difficulties. Hence, this interventional study focuses on improving reading skills in children with autism. Most children with autism are good at visual learning and colour recognition which is a kind of visual perceptual property on the light distribution of objects (Grandin, 2009), (Kunda & Goel, 2008). In other words, they tend to learn better with visual cues. Therefore, colour based words may attract children with autism to participate in the designed activity compared to verbal communication or instruction.

## **FINDINGS**

Subject A scores the highest among four subjects in the overall language skills observation. However, Subject A only scores moderately for the reading section. He imitates and tries to pronounce from the beginning every time after forgetting any letters. His teacher finds that he has difficulty in understanding abstract concepts and explanations. At the same time, he is less responsive towards questions or instructions. Sometimes, he faces difficulties to pronounce specific sounds correctly. On the other hand, Subject B has a lower level of achievement. He gets easily confused with the sound of 'b' and 'd', 'e' and 'i', 'a' and 'u'. He also has a poor attention span in completing the tasks. Since he likes reading, he likes to express certain speech sounds or words randomly as he reads in his mind. The girl with autism, Subject C has the similar situation as Subject B. She faces difficulty to differentiate between 'a' and 'u'. Besides that, she stays silent for about one minute to think of the sound of a letter that the researcher points to. She is passive and gives the least response during the class. Although she has no stuttering, she tends to deliver and answer with muddled speech. Subject D has better assessment result. She is passive but is able to make the sounds according to pictures besides reading a few letters. However, she mistakenly read 'a' and 'b' with the same letter sound which is 'a'. Although she is introverted, she can follow the instructions and is always ready to answer the questions. She rarely responds to teacher's explanations or instructions.

The phases lead to different achievements between subjects although they are children from the same category of special needs. It is definitely not an easy task as the subjects were found to have a short attention span as seen during observations carried out through the sessions. Based on observations, Subject A has better performance during baseline phase because he follows the sessions well although he could spell the letter sounds only. He could sit and follow the instructions given. In contrast, Subject B could only spell a few letters used in the words but could not read correctly. Besides that, he could only recognise a few letters. His short attention span results in interrupted reading progress. Moreover, Subject A manages to achieve the higher level than Subject B for the overall reading progress. Subject A could read part of the reading task independently during the implementation of ISWM. While, Subject B has increasing scores in the intervention phase. Moreover, there is a meeting point for Subject A and Subject B in the reading task involving 3 letters and 3 vowels. Nevertheless, both of them deteriorate to require prompting during the first session of the maintenance phase. Luckily, Subject A could adapt himself and perform consistently from the second session until the last session. Conversely, Subject B achieves lower scale compared with Subject A. Nevertheless, he scores better in the maintenance phase comparing to his baseline sessions.

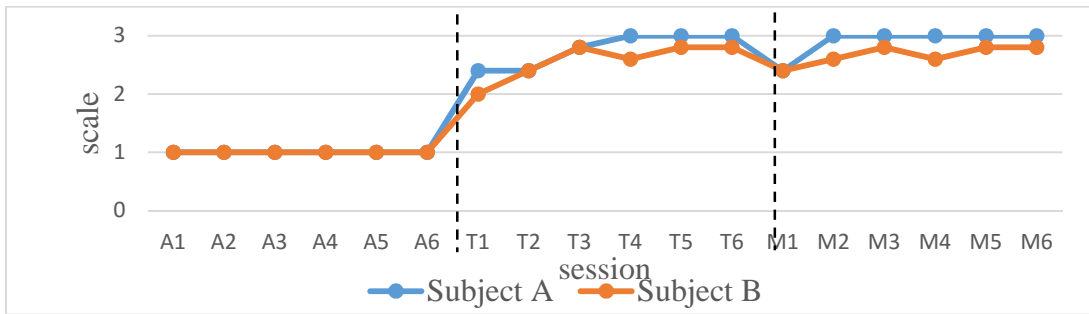


Figure 4.1. Reading Outcome Data of Letter 'b' for Subject A and Subject B Using ISWM.

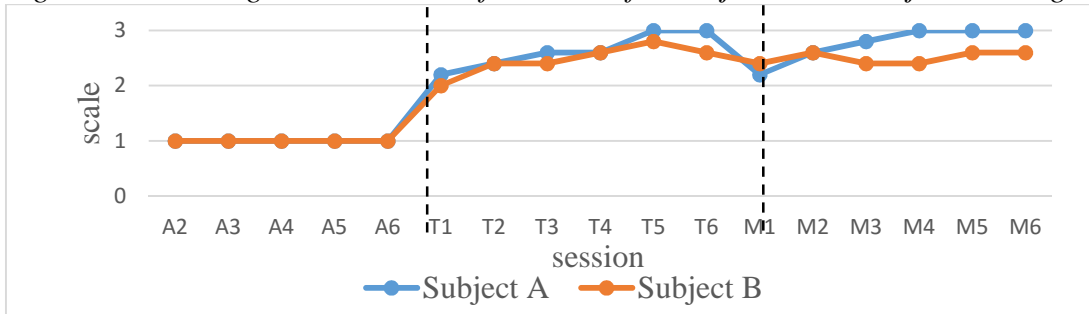


Figure 4.2. Reading Outcome Data of Letter 'c' for Subject A and Subject B Using ISWM.

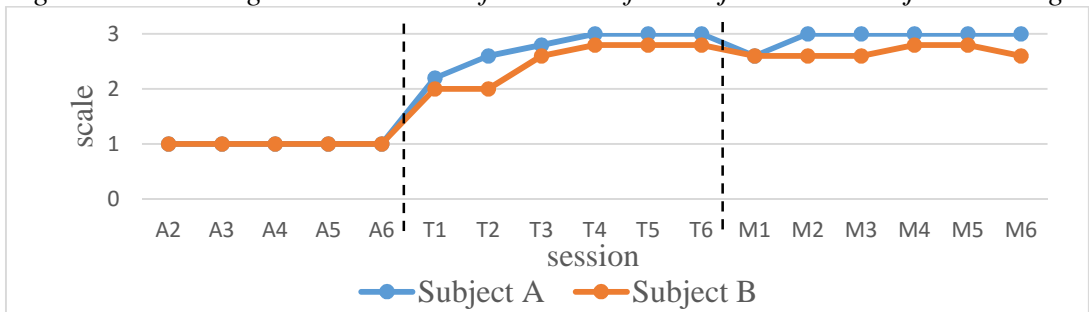


Figure 4.3. Reading Outcome Data of Letter 'k' for Subject A and Subject B Using ISWM.

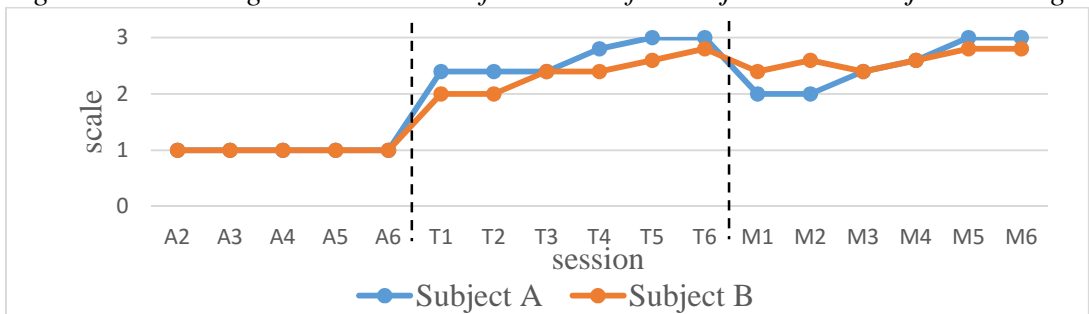


Figure 4.4. Reading Outcome Data of Letter 'b, c, k' for Subject A and Subject B Using ISWM.

Scale: (1) Unable (2) With Prompt (3) Independent

Subject C and Subject D score similar level at baseline phase. As go into details, Subject D reached a higher level when she pronounced the letter 'b' and 'k' with sound correctly. During the implementation of ISWM, Subject D improved her reading progress for every session which is displayed by the ascending achievement. She succeeded to maintain the highest level for last two sessions. Conversely, Subject C has the lower reading performance for her

intervention phase. She able to read only with prompt. However, she could increase her reading progress slowly and score better than her baseline results. On the other hand, she has a meeting point with Subject D on the fifth session of letter 'k' reading task. As the overall performance, Subject D still leading the comparison of reading outcome data between two of them. She improved her reading skills after the intervention phase where most of her maintenance sessions are over the scale that reading with guiding. However, there are a big different between the reading outcomes of two girls with autism. Subject C has less improvement after the intervention phase. There is a low gaining progress for the maintenance sessions. Besides that, she got nearly all of her reading sessions with the prompt.

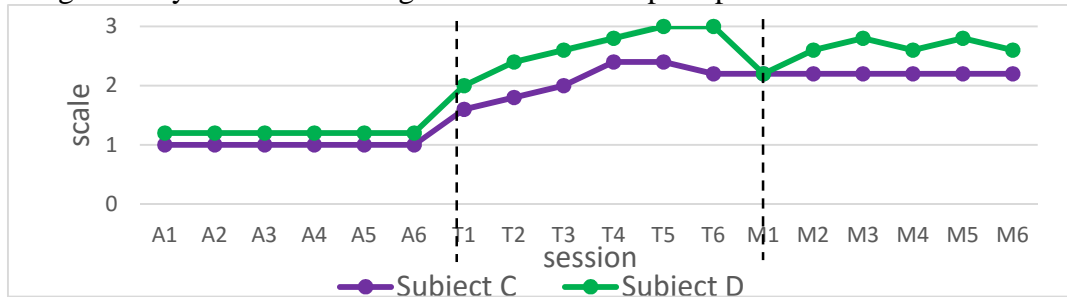


Figure 4.5. Reading Outcome Data of Letter 'b' for Subject C and Subject D Using ISWM.

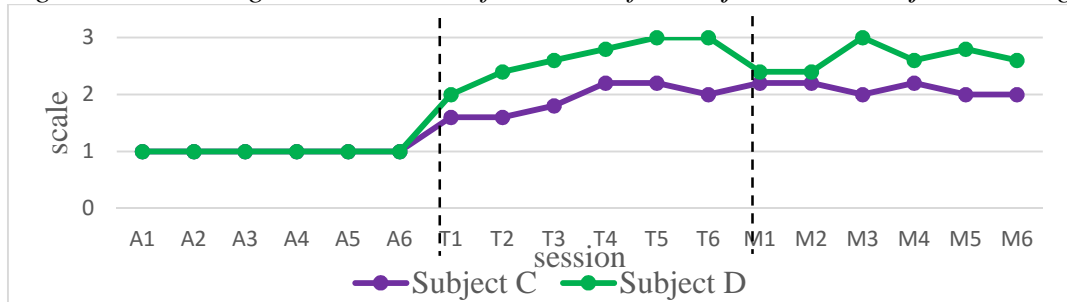


Figure 4.6. Reading Outcome Data of Letter 'c' for Subject C and Subject D Using ISWM.

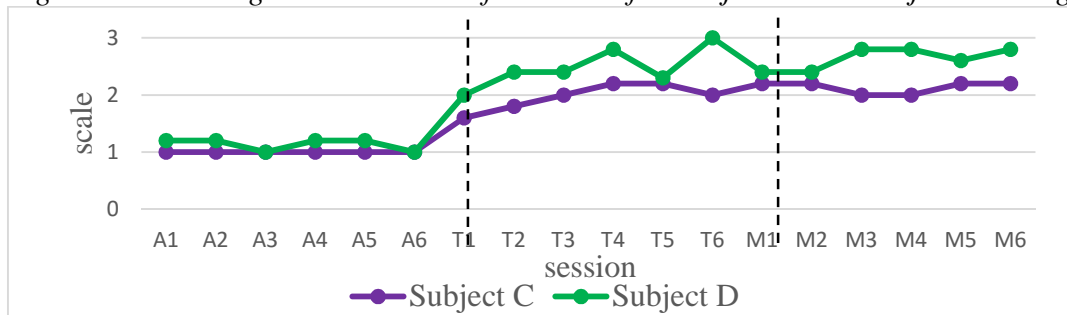
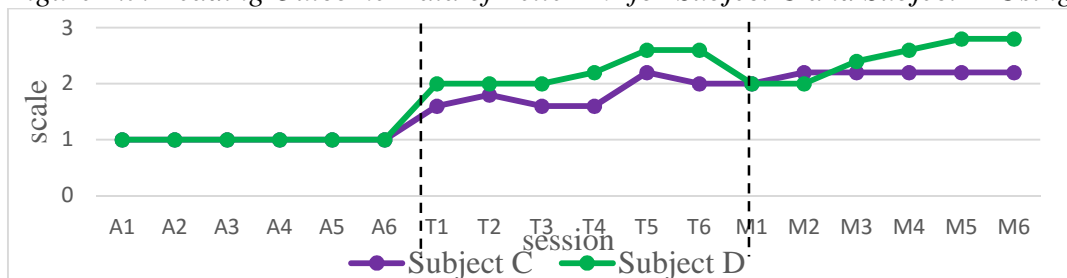


Figure 4.7. Reading Outcome Data of Letter 'k' for Subject C and Subject D Using ISWM.



4.8. Reading Outcome Data of Letter 'b, c, k' for Subject C and Subject D Using ISWM.  
 Scale: (1) Unable (2) With Prompt (3) Independent

## DISCUSSION

The Diagnostic and Statistical Manual of Mental Disorders, fourth edition, text revision (DSM-IV-TR) states that children with autism are found with low social engagement and communication which reveal the difficulties in language acquisition among these children. Moreover, the children's background knowledge forms an important foundation for their language acquisition level besides revealing their learning difficulties in all aspects of language. Based on the result of the pre-knowledge assessment, there are many similarities between the subjects of the study. The statement is in line with the finding by Kjelgaard & Tager-Flusberg (2001) who found that many children with autism have normal articulation. The subjects' language background is further validated using second data collection by a questionnaire answered by their teachers. Sinno et al. (2013) found that the poor interactions and interests cause the delay of language acquisition. They are poor in most parts of language skills. Subsequently, DSM-IV-TR and Sinno et al. (2013) manifest the influences of behaviours control on the progress of language acquisition. The language assessment and questionnaire contribute to the details of strengths and weaknesses in language development among subjects who represent children with autism. Precisely, both sets of data indicate that reading skills are the main difficulties faced by children with autism. Maljaars et al. (2012) discover that children with autism usually express in basic word units. For that reason, the implementation of ISWM with introducing from basic words to simple sentences in acquiring language especially for children with autism who seems to have limited vocabulary.

Shaw-Cosman (2008), Harris (2007) and Goldstein (2002) proves that an effective reading skills approach improved the language development among children with autism. In view of the reading outcome data on Subject A and Subject B, it is now certain that ISWM is vital to improve their reading skills. Their results are in line with the findings. Their improvement could sweep over the findings by Ricketts et al. (2013) and Williams et al. (2008) about the poor performance of low functioning children with autism in the syntactic acquisition and language comprehension. However, Sigafoos (2000) further delineates that behavioural issues may compound difficulties in language acquisition. Subject B has similar behaviour but he prefers to finish it fast without following instructions. In spite of this, that is indeed remarkable that the reading level of boys with autism improve by following the reading sessions after implementing ISWM. Although it is found that the girls with autism have the similar baseline knowledge with Subject A and Subject B, their reading progress are slower than boys with autism. One of the main challenges in teaching children with autism is the limited attention span (Shaw-Cosman, 2008; Harris, 2007; Goldstein, 2002). Same with Subject B, some of Subject C's reading sessions are interrupted by poor concentration. In case, it does not look like the Subject C will improve to her full potential in the allotted amount of time, but with her slight overall improvement, the implementation of ISWM is suitable and is pushing her reading to the upper level. Conversely, Subject D performs the efficient progress in words and sentences reading at the intervention and maintenance phases which are supported the finding by Sana Shafiuddin (2012) that reading skills should start with techniques on fluency skills besides exposition of vocabulary and interpretations of words. It is amazing to see her reading skills improve and maintain in the third phase. ISWM is effective in improving the reading performance among girls with autism during and after the intervention phase.

## IMPLICATION OF STUDIES

It is believed that many children with autism can acquire sufficient knowledge using the current syllables. Unfortunately, lessons are not tailored for them to explore and learn deeper

from the skills that what they have already mastered. Hence, it would be ideal if sufficient lesson plans emphasizing on language skills are provided to accomplish higher goals for learning. Based on Autism Research Institute (2005), a help is needed for every child with autism. Therefore, teacher or guider should lead them to try and acquire the skills that the children have not achieved. The same goes to professional service. A speech language pathologist with experience in child development is needed to cooperate with teachers in mainstream school. The language lessons can focus to improve their weaknesses such as communication, social, behavioural skills besides strengthening their academic achievements and exposing them the daily living skills. Definitely, children with autism can have sufficient improvement in their learning and living with guidance of professionals.

### **RECOMMENDATION**

Hopefully by understanding autism, researchers would be able to dig deeper in language skills which is the gateway to access other skills in their daily living. As the characteristics of autism could be treatable, further and deeper language skills should be expose to the children with autism. It will be great if researchers could investigate the language process in autism's brain to find out the inner language acquisition system which would be the key to help children with autism to accomplish their language acquisition more sufficiently. While in the field of non-linguistics, the studies on non-verbal features such as gesture, eye contact, facial expression and posture could be supportive evidence to enhance the development of language skills as well as the communication process.

### **CONCLUSION**

Lastly, the study succeed to emphasize and proven the effectiveness of ISWM in improving the reading among children with autism. As the improvement of reading skills is confirmed, the following step is to identify the alternative way to implement the ISWM as the tool to acquire other language skills. If this skills is given attention and emphasized, it would effectively help the parents, teachers and professionals to assist with the language development sufficiently among children with autism.

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## Appendices

Activity of Integrated Sound-Word Method

Alphabet	Duration	Intervention/ Activity	Activity of Children of Autism	Teaching aids
b	½ hour	1. Ask the sample to pronounce the alphabet sound.	1. Pronounce the alphabet sound.	Flash cards b
		2. Combine the alphabet with vocal into syllable. Ask the sample to pronounce the syllable sound.	2. Pronounce the syllable sound.	b + a = ba b + i = bi b + u = bu
		3. Combine two syllables into word. Ask the sample to read the word.	3. Read the word.	ba + ba = baba bi + bi = bibi bu + bu = bubu i + bu = ibu u + bi = ubi
		4. Combine two words into phrase. Ask the sample to read the phrase.	4. Read the phrase.	ubi + ibu = ubi ibu bubu + ibu = bubu ibu ibu + baba = ibu baba
		5. Combine the phrase into sentence. Ask the sample to read sentence.	5. Read the sentence.	ubi ibu baba. bubu ibu baba.

Activity of Integrated Sound-Word Method




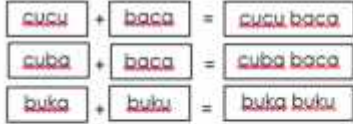
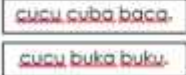
Appendix B

Alphabet	Duration	Intervention/ Activity	Activity of Children with Autism	Teaching aids
c	½ hour	1. Ask the sample to pronounce the alphabet sound.	1. Pronounce the alphabet sound.	Flash cards c
		2. Combine the alphabet with vocal into syllable. Ask the sample to pronounce the syllable sound.	2. Pronounce the syllable sound.	c + a = ca c + i = ci c + u = cu
		3. Combine two syllables into word. Ask the sample to read the word.	3. Read the word.	ca + ca = caca      cu + ci = cuci ci + ci = cici      a + cu = acu cu + cu = cucu
		4. Combine two words into phrase. Ask the sample to read the phrase.	4. Read the phrase.	cucu + caca = cucu caca cucu + cuci = cucu cuci cucu + cuci = cuci acu
		5. Combine the phrase into sentence. Ask the sample to read sentence.	5. Read the sentence.	cucu caca cuci. caca cuci acu.

Activity of Integrated Sound-Word Method

Alphabet	Duration	Intervention/ Activity	Activity of Children with Autism	Teaching aids
k	½ hour	1. Ask the sample to pronounce the alphabet sound.	1. Pronounce the alphabet sound.	Flash cards k
		2. Combine the alphabet with vocal into syllable. Ask the sample to pronounce the syllable sound.	2. Pronounce the syllable sound.	k + a = ka k + i = ki k + u = ku
		3. Combine two syllables into word. Ask the sample to read the word.	3. Read the word.	ka + ka = kaka      ka + ki = kaki ki + ki = kiki      ka + ku = kaku ku + ku = kuku
		4. Combine two words into phrase. Ask the sample to read the phrase.	4. Read the phrase.	kuku + kaki = kuku kaki kaki + kaka = kaki kaka kaki + kaku = kaki kaku
		5. Combine the phrase into sentence. Ask the sample to read sentence.	5. Read the sentence.	kuku kaki kaka. kaki kaka kaku.

Activity of Integrated Sound-Word Method

Alphabet	Duration	Intervention/ Activity	Activity of Children with Autism	Teaching aids
b, c, k	½ hour	1. Ask the sample to pronounce the alphabet sound.	1. Pronounce the alphabet sound.	Flash cards 
		2. Combine the alphabet with vocal into syllable. Ask the sample to pronounce the syllable sound.	2. Pronounce the syllable sound.	
		3. Combine two syllables into word. Ask the sample to read the word.	3. Read the word.	
		4. Combine two words into phrase. Ask the sample to read the phrase.	4. Read the phrase.	
		5. Combine the phrase into sentence. Ask the sample to read sentence.	5. Read the sentence.	

EVALUATION FORM  
 INTEGRATED SOUND-WORD METHOD

NAME .....  
 D.O.B .....  
 AGE .....  
 GENDER .....  
 DIAGNOSIS .....  
 CLASSIFICATION .....

Instruction : Put tick (✓) for the selected phase.

Phase : 

Baseline Phase		Intervention		Maintenance	
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Recorded by : \_\_\_\_\_

Alphabet	Activity of Children of Autism	Scale		
		1	2	3
<b>b</b>	1. Pronounce the alphabet sound.			
	2. Pronounce the syllable sound.			
	3. Read the word.			
	4. Read the phrase.			
	5. Read the sentence.			
<b>c</b>	1. Pronounce the alphabet sound.			
	2. Pronounce the syllable sound.			
	3. Read the word.			
	4. Read the phrase.			
	5. Read the sentence.			
<b>k</b>	1. Pronounce the alphabet sound.			
	2. Pronounce the syllable sound.			
	3. Read the word.			
	4. Read the phrase.			
	5. Read the sentence.			
<b>b, c, k</b>	1. Pronounce the alphabet sound.			
	2. Pronounce the syllable sound.			
	3. Read the word.			
	4. Read the phrase.			
	5. Read the sentence.			

Scale: 1 = Unable      2 = With prompt      3 = Independent