



THE EFFECT OF ARTICULATING TRAINING AND THE USE OF EDUCATIONAL GAMES ON IMPROVING VERBAL COMMUNICATION ABILITIES IN CHILDREN WITH CEREBRAL PALSY (A Single-Subject Study on Nayla Alifah Firmansyah)

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ABSTRACT

This study aimed to determine the effects of two variables articulation exercises and the use of educational toys on the verbal communication skills of a child with cerebral palsy (Nayla Alifah Firmansyah), as well as to compare the effects of these two variables. A single-subject research design (ABA) was employed to assess Nayla Alifah Firmansyah's expressive and receptive verbal responses to the articulation exercises and educational toys administered by the researcher. The study results showed that: (1) following the articulation exercise treatment, the child demonstrated a higher level of verbal communication ability (6,526 points or 55%); (2) following the treatment involving educational toys, the child demonstrated a lower level of verbal communication ability (5,260 points or 45%); and (3) a comparison revealed a difference in the effects of the two treatments, with articulation exercises proving more effective than the use of educational toys. Additionally, the study yielded a further finding: (4) the results in points 1, 2, and 3 applied only when Nayla was in good physical and psychological health; following an illness, she lost the communication skills she had previously mastered, necessitating a restart of the intervention treatment from the beginning.

Keywords: *articulation exercises, use of educational toys, verbal communication skills*

INTRODUCTION

Communication is a fundamental aspect of life; it is the means by which social connections are formed. Communication skills influence a person's ability to express information, feelings, ideas, needs, and experiences, as well as to navigate social relationships. Communication occurs through verbal or non-verbal channels, or a combination of both. Thus, it is evident that communication plays a crucial role in human life, including for school-aged children. Any barriers to communication can have significant impacts on a child's academic, emotional, and social well-being.

Communication principles are fundamental to the existence of effective communication. According to Hardari Nawawi (as cited by Wahyu Sri Ambar Arrum), there are seven principles of communication: 1) Clarity, 2) Appropriateness, 3) Adequacy, 4) Timing, 5) Dissemination, 6) Uniformity, and 7) Attractiveness. These seven principles are intended to ensure that the information conveyed is clear preventing misinterpretation or confusion and neither excessive nor insufficient; that it is timely and current; that it reaches

the right people for effective use; that general information is presented in a uniform format; and that the message is engaging and comprehensible to the recipient. If any of these principles are compromised, communication cannot function optimally.

There are various types of communication barriers, one of which is experienced by some children with cerebral palsy. According to Bakwin and Bakwin (cited in Rini Hildayani), cerebral palsy refers to non-progressive changes in movement or motor function resulting from intracranial damage, injury, or disease occurring before, during, or shortly after birth (Rini Hildayani et al., 2016). Similarly, Hallahan and Kauffman define cerebral palsy as a syndrome encompassing motor dysfunction, psychological dysfunction, seizures, and behavioral disorders caused by brain damage. The primary impairment in cerebral palsy involves disrupted muscle control, meaning the condition manifests differently in each individual; for instance, one individual with cerebral palsy might experience only motor impairment, whereas another might exhibit a combination of symptoms.

Various studies have examined language acquisition and speaking skills across different groups of children. Parasian, Syarfina, and Gustianingsih (2025) demonstrated that responsive parenting and consistent verbal interaction accelerate first language acquisition in early childhood. However, as that study involved only children with typical development, the findings cannot yet be generalized to children with neurological disorders such as cerebral palsy accompanied by dysarthria.

Other studies conducted by Winarsih et al. (2023), Prasetyo et al. (2017), and Wahyuni et al. (2024) have demonstrated that the Reflective Maternal Method (RMM) is effective in improving communication skills and language comprehension among students with hearing impairments. However, these studies focused on hearing impairments and did not develop intervention models specifically for children with cerebral palsy who have speech-motor disorders. Furthermore, these studies did not compare the effectiveness of various forms of speech exercises or the use of educational media to support verbal communication therapy.

Other research on speaking skills in schools has largely focused on general instructional strategies such as interactive learning, the "Talking Stick" method, and Problem-Based Learning. These findings indicate that communicative activities can boost students' confidence in speaking, learning participation, and social interaction. However, most of this research remains conceptual or involves learners without speech-motor impairments; consequently, there is a lack of empirical evidence regarding interventions based on articulation exercises for children with cerebral palsy and dysarthria.

Recent studies indicate that children with cerebral palsy experience impairments in phonology, articulation, syntax, and lexical development, resulting in low speech intelligibility. However, the majority of research has focused on diagnosis, classification, or systematic analyses of language disorder characteristics, without yet yielding practical intervention models applicable to either educational settings or communication therapy.

A review of prior research reveals three research gaps. First, most studies focus on language acquisition in typically developing children or children with hearing impairments, whereas research concerning children with cerebral palsy and dysarthria remains very limited. Second, existing studies largely emphasize language comprehension or receptive communication, without specifically comparing the effectiveness of articulation exercises



versus educational game-based media in enhancing verbal communication. Third, few studies have employed a Single-Subject Research (SSR) design to conduct an in-depth evaluation of changes in verbal communication skills among children with cerebral palsy and dysarthria.

Addressing this gap, this study aims to analyze the effects of articulation exercises and the use of educational play materials on the verbal communication skills of children with cerebral palsy and dysarthria, employing a Single Subject Research (SSR) design. The study is expected to provide empirical contributions to the development of verbal communication interventions that can be implemented by special education teachers, speech therapists, and parents to support inclusive education.

METHOD

2.1 Research Design

This study employs a Single Subject Research (SSR) approach with an ABA (Baseline - Intervention - Baseline) design to evaluate changes in verbal communication skills following an intervention involving articulation exercises and educational play materials. The ABA design was selected because it enables the researcher to systematically observe behavioral changes by comparing conditions prior to the intervention (baseline), during the intervention (intervention), and after the intervention has ceased (return to baseline). This approach is suitable for an in-depth evaluation of intervention effectiveness for individuals with special needs.

The research subject was a girl, Nayla Alifah Firmansyah, who was diagnosed with spastic diplegic cerebral palsy accompanied by a speech disorder (dysarthria) and experienced difficulties with verbal communication. The subject was selected using purposive sampling based on her medical diagnosis, the characteristics of her communication disorder, and the alignment with the research objectives.

2.3 Data Collection Techniques

The intervention consists of two main components. The first component involves articulation exercises systematic practice in pronouncing the vowels [a, i, u, e, o], bilabial consonants [p, b, m, w], syllables, and simple words within daily routines to improve the coordination of speech organs. The second component utilizes educational play materials, such as picture, letter, and word cards, designed to stimulate verbal communication through meaningful play activities. Both interventions are implemented progressively and tailored to the subject's abilities during each session.

2.4 Data Analysis

Data collection was conducted through structured observation of verbal communication abilities throughout the research sessions. The aspects observed included articulation clarity, word pronunciation, responses to verbal stimuli, and participation in expressive and receptive communication. Data analysis employed a visual analysis approach, examining changes in trends, levels, stability, and overlap across research phases. This

approach was selected for its ability to provide a detailed depiction of behavioral changes, consistent with the characteristics of single-subject research.

RESULTS AND DISCUSSION

The following table presents an analysis of the results obtained from the use of educational play tools and articulation exercises conducted during the study involving the subject, Nayla Alifah Firmansyah. The table demonstrates significant changes in verbal communication abilities both expressive and receptive across the initial phase (Baseline A1), Phase 2 (Treatment), and Phase 3 (Baseline A2).

Latihan Artikulasi									
Verbal Ekspresif	Keterangan	Baseline 1 (A ₁)		Treatment (B)		Baseline 2 (A ₂)		TOTAL	
		Σ	%	Σ	%	Σ	%	Σ	%
	Vokal	220	6%	2237	63%	552	16%	3019	85%
	Konsonan Bilabial	9	0%	473	13%	45	1%	527	15%
	TOTAL	229	6%	2710	76%	597	17%	3546	100%

Latihan Artikulasi									
Verbal Reseptif	Keterangan	Baseline 1 (A ₁)		Treatment (B)		Baseline 2 (A ₂)		TOTAL	
		Σ	%	Σ	%	Σ	%	Σ	%
	Vokal	4	0%	2213	74%	71	2%	2288	77%
	Konsonan Bilabial	0	0%	678	23%	14	0%	692	23%
	TOTAL	4	0%	2891	97%	85	3%	2980	100%

Penggunaan Alat Permainan Edukatif									
	Keterangan	Basseline 1 (A ₁)		Treatment (B)		Basseline 2 (A ₂)		TOTAL	
		Σ	%	Σ	%	Σ	%	Σ	%
Verbal Ekspresif	Gelas	0	0%	372	21%	0	0%	372	21%
	piring	0	0%	387	22%	0	0%	387	22%
	Minum	0	0%	583	33%	4	0%	587	33%
	Makan	0	0%	443	25%	0	0%	443	25%
	Total	0	0%	1785	100%	4	0%	1789	100%

Penggunaan Alat Permainan Edukatif									
	Keterangan	Basseline 1 (A ₁)		Treatment (B)		Basseline 2 (A ₂)		TOTAL	
		Σ	%	Σ	%	Σ	%	Σ	%
Verbal Reseptif	Gelas	1	0%	996	29%	58	2%	1055	30%
	piring	2	0%	852	25%	29	1%	883	25%
	Minum	8	0%	789	23%	74	2%	871	25%
	Makan	2	0%	610	18%	50	1%	662	19%
	Total	13	0%	3247	94%	211	6%	3471	100%

3.1 Research result

The research results indicate that both forms of intervention had a positive impact on the subjects' verbal communication abilities. However, articulation exercises contributed more significantly than the use of educational play tools. Visual analysis shows that articulation exercises led to a 55% improvement in verbal communication abilities, whereas the use of educational play tools contributed 45%.

During the baseline phase, the subject demonstrated limited verbal communication abilities. Observed difficulties included unclear articulation, trouble pronouncing words in their entirety, and inconsistent verbal responses to stimuli. These conditions reflect characteristics typical of dysarthria in children with cerebral palsy, which affects speech motor coordination.

During the intervention phase, verbal communication skills improved gradually. The subject began to articulate vowels, bilabial consonants, syllables, and simple words more clearly. Furthermore, the use of picture cards, letter cards, and word cards enhanced attention, motivation, and the frequency of verbal communication during the learning process.

Research also indicates that improvements in verbal communication skills do not progress linearly. Temporary declines in performance occur when the subject's physical health deteriorates such as during episodes of fatigue or illness. These findings suggest that the effectiveness of the intervention is influenced by the child's physiological readiness and psychological state throughout the therapy process.

1. Intervensi Latihan Artikulasi

NAMA SUBYEK :		NAYLA ALIFAH FIRMANSYAH															
PENGAMAT :		DEPI PUJIYANTI															
PERILAKU SASARAN :		Kemampuan verbal ekspresif dan reseptif huruf vokal a, i, u, e, o dan huruf konsonan bilabial p, b, m, w pada Nayla Alifah Firmansyah.															
BASELINE 1 (A1)	30 Menit	KEMAMPUAN EKSPRESIF															
		VOKAL a, i, u, e, o								KONSONAN BILABIAL p, b, m, w							
		5	10	15	20	25	30	Σ	%	5	10	15	20	25	30	Σ	%
		Sesi 1	1	4	-	5	-	12	22	10%	-	-	-	-	-	0	0%
		Sesi 2	3	1	8	-	4	26	42	19%	-	1	-	-	-	1	11%
		Sesi 3	22	17	15	-	4	45	103	47%	7	-	-	-	-	7	78%
		Sesi 4	4	2	4	3	-	16	29	13%	-	-	1	-	-	1	11%
		Sesi 5	1	-	2	6	15	-	24	11%	-	-	-	-	-	0	0%
		TOTAL	31	24	29	14	23	99	220		7	1	1	0	0	9	
		%	14%	11%	13%	6%	10%	45%	100%	78%	11%	11%	0%	0%	0%		100%
BASELINE 1 (A1)	30 Menit	KEMAMPUAN RESEPTIF															
		VOKAL a, i, u, e, o								KONSONAN BILABIAL p, b, m, w							
		5	10	15	20	25	30	Σ	%	5	10	15	20	25	30	Σ	%
		Sesi 1	1	3	-	-	-	4	100%	-	-	-	-	-	-	0	0%
		Sesi 2	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
		Sesi 3	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
		Sesi 4	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
		Sesi 5	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
		TOTAL	1	3	0	0	0	4		0	0	0	0	0	0	0	
		Prosentase	25%	75%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%



NAMA SUBYEK		:	NAYLA ALIFAH FIRMANSYAH															
PENGAMAT		:	DEPI PUJIYANTI															
PERILAKU SASARAN		:	Kemampuan verbal ekspresif dan															
TREATMENT/INTERVENS (B)	60 Menit	KEMAMPUAN EKSPRESIF																
		VOKAL a, i, u, e, o																
		5	10	15	20	25	30	35	40	45	50	55	60	Σ	%			
	Sesi 1	7	37	43	26	63	49	10	-	52	26	-	313	14%				
	Sesi 2	-	33	11	29	19	29	18	-	32	32	8	-	211	9%			
	Sesi 3	-	-	57	35	25	22	18	23	7	12	22	16	237	11%			
	Sesi 4	10	10	-	-	-	7	10	6	9	-	-	21	73	3%			
	Sesi 5	-	22	1	3	6	27	-	30	39	-	15	-	143	6%			
	Sesi 6	-	22	-	-	28	36	69	-	-	-	55	15	225	10%			
	Sesi 7	-	26	16	-	26	67	93	62	15	7	-	-	312	14%			
	Sesi 8	-	-	12	32	15	15	-	-	-	24	28	19	145	6%			
	Sesi 9	-	-	13	32	51	-	-	12	54	3	124	-	289	13%			
	Sesi 10	-	-	35	32	50	5	-	12	6	84	65	-	289	13%			
	TOTAL	17	150	188	189	283	257	218	145	162	214	343	71	2237				
	Prosentase	1%	7%	8%	8%	13%	11%	10%	6%	7%	10%	15%	3%		100%			
	TREATMENT/INTERVENS (B)	60 Menit	KEMAMPUAN EKSPRESIF															
			KONSONAN BILABIAL p, b, m, w															
			5	10	15	20	25	30	35	40	45	50	55	60	Σ	%		
		Sesi 1	-	27	-	-	-	4	40	-	1	-	5	13	90	19%		
		Sesi 2	-	14	-	-	2	7	10	-	10	3	4	-	50	11%		
Sesi 3		-	-	10	5	-	3	-	-	-	2	6	1	27	6%			
Sesi 4		4	3	-	-	-	-	-	-	-	3	13	3	26	5%			
Sesi 5		-	3	5	-	-	-	-	1	-	35	15	5	64	14%			
Sesi 6		-	5	-	-	-	-	-	29	28	-	-	12	74	16%			
Sesi 7		-	5	2	-	2	-	-	-	2	-	1	31	43	9%			
Sesi 8		-	-	3	18	4	2	-	-	-	-	-	-	27	6%			
Sesi 9		-	-	12	6	3	-	-	-	-	-	4	37	62	13%			
Sesi 10		-	-	5	-	2	3	-	-	-	-	-	-	10	2%			
TOTAL		4	57	37	29	13	19	50	30	41	43	48	102	473				
Prosentase		1%	12%	8%	6%	3%	4%	11%	6%	9%	9%	10%	22%		100%			

TREATMENT/ INTERVENSI (B)	60 Menit	KEMAMPUAN RESEPTIF																Σ	%
		VOKAL a, i, u, e, o																	
		5	10	15	20	25	30	35	40	45	50	55	60						
	Sesi 1	5	12	25	14	55	57	-	-	-	37	16	-	221	10%				
	Sesi 2	-	20	8	12	13	26	10	-	35	35	7	-	166	8%				
	Sesi 3	-	-	36	21	24	22	3	14	14	3	17	15	169	8%				
	Sesi 4	12	10	-	-	-	3	5	2	12	-	-	20	64	3%				
	Sesi 5	-	27	-	-	11	15	-	20	38	-	10	-	121	5%				
	Sesi 6	-	17	-	-	14	41	83	-	-	-	110	20	285	13%				
	Sesi 7	-	24	26	-	16	60	85	95	15	7	n	-	328	15%				
	Sesi 8	-	-	12	37	15	15	-	-	-	28	46	40	193	9%				
	Sesi 9	-	5	16	29	42	-	-	9	54	8	125	5	293	13%				
	Sesi 10	-	-	25	32	85	14	-	9	7	100	96	5	373	17%				
	TOTAL	17	115	148	145	275	253	186	149	175	218	427	105	2213					
	Prosentase	1%	5%	7%	7%	12%	11%	8%	7%	8%	10%	19%	5%		100%				
	60 Menit	KEMAMPUAN RESEPTIF																Σ	%
		KONSONAN BILABIAL p, b, m, w																	
		5	10	15	20	25	30	35	40	45	50	55	60						
	Sesi 1	-	7	-	-	-	-	27	3	-	4	10	4	55	8%				
	Sesi 2	-	7	-	-	1	-	10	-	12	4	4	-	38	6%				
	Sesi 3	-	-	3	4	-	4	-	-	-	6	8	5	30	4%				
	Sesi 4	8	7	-	-	-	-	-	-	4	8	17	5	49	7%				
	Sesi 5	-	6	13	-	-	-	-	9	-	17	15	13	73	11%				
	Sesi 6	-	11	-	-	-	-	-	69	35	8	10	76	209	31%				
	Sesi 7	-	9	3	-	4	-	-	-	2	-	2	82	102	15%				
	Sesi 8	-	-	6	18	6	12	-	-	-	-	-	-	42	6%				
	Sesi 9	-	-	18	11	7	2	-	-	-	-	4	10	52	8%				
	Sesi 10	-	-	12	-	2	14	-	-	-	-	-	-	28	4%				
	TOTAL	8	47	55	33	20	32	37	81	53	47	70	195	678					
	Prosentase	1%	7%	8%	5%	3%	5%	5%	12%	8%	7%	10%	29%		100%				

NAMA SUBYEK		: NAYLA ALIFAH FIRMANSYAH																	
PENGAMAT		: DEPI PUJIYANTI																	
PERILAKU SASARAN		: Kemampuan verbal ekspresif dan																	
BASELINE 2 (A2)	30 Menit	KEMAMPUAN EKSPRESIF																	
		VOKAL a, i, u, e, o									KONSONAN BILABIAL p, b, m, w								
		5	10	15	20	25	30	Σ	%		5	10	15	20	25	30	Σ	%	
	Sesi 1	24	29	30	16	24	17	140	25%	-	-	12	-	1	-	-	13	29%	
	Sesi 2	24	20	3	20	23	59	149	27%	15	-	-	7	2	2	26	58%		
	Sesi 3	23	31	30	15	23	17	139	25%	-	-	12	-	1	-	-	13	29%	
	Sesi 4	11	26	28	16	6	23	110	20%	-	-	2	2	-	-	4	8	18%	
	Sesi 5	3	2	2	4	1	2	14	3%	6	-	-	-	-	-	-	6	13%	
	TOTAL	85	108	93	71	77	118	552		21	-	26	9	4	6	45			
	Prosentase	15%	20%	17%	13%	14%	21%		100%	47%	-	58%	20%	9%	13%		100%		
BASELINE 2 (A2)	30 Menit	KEMAMPUAN RESEPTIF																	
		VOKAL a, i, u, e, o									KONSONAN BILABIAL p, b, m, w								
		5	10	15	20	25	30	Σ	%		5	10	15	20	25	30	Σ	%	
	Sesi 1	3	5	5	3	4	11	31	44%	-	2	-	-	-	-	4	6	43%	
	Sesi 2	-	-	-	-	-	-	0	0%	2	-	-	-	-	-	-	2	14%	
	Sesi 3	3	5	5	3	4	11	31	44%	-	2	-	-	-	-	4	6	43%	
	Sesi 4	-	-	2	2	-	4	8	11%	-	-	-	-	-	-	-	0	0%	
	Sesi 5	-	-	-	-	1	-	1	1%	-	-	-	-	-	-	-	0	0%	
	TOTAL	6	10	12	8	9	26	71		2	4	0	0	0	8	14			
	Prosentase	8%	14%	17%	11%	13%	37%		100%	14%	29%	0%	0%	0%	57%		100%		



2. Intervensi Alat Permainan Edukatif

NAMA SUBYEK		: NAYLA ALIFAH															
PENGAMAT		: DEPI PUJIYANTI															
PERILAKU		: Kemampuan verbal															
BASELINE 1 (A1)	30 Menit	KEMAMPUAN EKSPRESIF															
		Gelas								Piring							
		5	10	15	20	25	30	Σ	%	5	10	15	20	25	30	Σ	%
		Sesi 1	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
		Sesi 2	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
		Sesi 3	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
		Sesi 4	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
		Sesi 5	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
		TOTAL	0	0	0	0	0	0		-	-	-	-	-	-	0	
		Present	0%	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%	0%	0%
		KEMAMPUAN EKSPRESIF															
		Minum								Makan							
		5	10	15	20	25	30	Σ	%	5	10	15	20	25	30	Σ	%
		Sesi 1	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
		Sesi 2	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
		Sesi 3	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
		Sesi 4	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
		Sesi 5	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
		TOTAL	0	0	0	0	0	0		0	0	0	0	0	0	0	
		Present	0%	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%	0%	0%

TREATMENT/INTERVENSI (B)	60 Menit	KEMAMPUAN EKSPRESIF															
		Gelas														Σ	%
	Sesi 1	-	-	-	-	-	25	-	40	-	-	-	-	-	25	7%	
	Sesi 2	-	-	-	-	-	8	8	-	-	-	-	-	-	16	4%	
	Sesi 3	-	-	-	-	-	-	24	-	-	-	-	-	-	24	6%	
	Sesi 4	-	-	-	2	-	24	30	-	-	-	-	-	-	56	15%	
	Sesi 5	-	-	2	-	-	8	42	-	-	-	-	-	-	52	14%	
	Sesi 6	-	-	-	-	-	-	2	-	50	-	-	-	-	52	14%	
	Sesi 7	-	-	2	-	-	2	-	3	6	18	-	-	-	31	8%	
	Sesi 8	-	-	-	-	8	30	-	-	-	-	-	-	-	38	10%	
Sesi 9	-	-	-	-	-	6	28	-	-	-	-	-	-	34	9%		
Sesi 10	-	-	-	2	42	-	-	-	-	-	-	-	-	44	12%		
TOTAL	0	0	4	4	50	103	134	3	56	18	0	0	372				
Prosent	0%	0%	1%	1%	13%	28%	36%	1%	15%	5%	0%	0%		100%			
TREATMENT/INTERVENSI (B)	60 Menit	KEMAMPUAN EKSPRESIF															
		Piring														Σ	%
	Sesi 1	-	-	-	-	-	-	24	-	-	-	-	2	26	7%		
	Sesi 2	-	-	-	-	-	-	-	12	6	-	-	-	18	5%		
	Sesi 3	-	-	-	2	-	-	-	18	12	-	-	-	32	8%		
	Sesi 4	-	-	-	-	-	-	-	49	-	-	-	-	49	13%		
	Sesi 5	-	-	1	-	-	-	-	42	-	-	-	-	43	11%		
	Sesi 6	-	-	-	-	-	-	-	-	-	39	-	-	39	10%		
	Sesi 7	-	-	2	-	-	-	-	-	-	14	7	-	23	6%		
	Sesi 8	-	-	-	-	-	-	7	49	-	-	-	-	56	14%		
Sesi 9	-	-	-	-	-	-	-	4	14	24	-	-	42	11%			
Sesi 10	10	-	-	-	-	37	12	-	-	-	-	-	59	15%			
TOTAL	10	0	3	2	0	37	43	174	32	77	7	2	387				
Prosent	3%	0%	1%	1%	0%	10%	11%	45%	8%	20%	2%	1%		100%			
TREATMENT/INTERVENSI (B)	60 Menit	KEMAMPUAN EKSPRESIF															
		Minum														Σ	%
	Sesi 1	-	-	-	-	-	-	-	-	25	-	-	5	30	5%		
	Sesi 2	-	-	-	-	-	-	-	-	-	10	-	12	22	4%		
	Sesi 3	-	-	-	3	3	-	-	-	18	18	-	-	42	7%		
	Sesi 4	-	-	5	15	21	3	-	-	-	21	38	-	104	18%		
	Sesi 5	-	-	-	8	-	-	-	42	10	4	-	-	56	10%		
	Sesi 6	-	-	-	4	6	-	4	-	4	-	67	20	105	18%		
	Sesi 7	-	-	-	7	-	-	-	-	-	-	8	4	19	3%		
	Sesi 8	-	-	3	3	3	-	-	-	12	56	-	-	77	13%		
Sesi 9	-	-	2	5	-	-	-	-	-	10	22	18	57	10%			
Sesi 10	-	-	5	-	-	-	36	30	-	-	-	-	71	12%			
TOTAL	0	0	15	45	3	3	40	72	69	119	135	59	583				
Prosent	0%	0%	3%	8%	1%	1%	7%	12%	12%	20%	23%	10%		100%			
TREATMENT/INTERVENSI (B)	60 Menit	KEMAMPUAN EKSPRESIF															
		Makan														Σ	%
	Sesi 1	-	-	-	-	-	-	-	-	3	30	3	-	36	8%		
	Sesi 2	-	-	-	-	-	-	-	-	-	-	-	6	6	1%		
	Sesi 3	-	-	-	2	-	-	-	-	-	6	24	-	32	7%		
	Sesi 4	-	-	12	5	27	4	-	-	-	-	-	9	57	13%		
	Sesi 5	-	-	-	3	-	-	-	-	10	4	23	20	60	14%		
	Sesi 6	-	-	-	6	3	-	2	-	4	-	25	62	102	23%		
	Sesi 7	-	-	-	3	-	-	-	-	-	-	6	6	15	3%		
	Sesi 8	-	-	-	3	3	3	-	-	-	-	22	58	89	20%		
Sesi 9	-	-	2	3	-	-	-	-	-	-	-	4	9	2%			
Sesi 10	-	-	4	-	-	-	-	-	12	21	-	-	37	8%			
TOTAL	0	0	18	25	33	7	2	0	29	61	103	165	443				
Prosent	0%	0%	4%	6%	7%	2%	0%	0%	7%	14%	23%	37%		100%			



TREATMENT/ INTERVENSI (B)	60 Menit	KEMAMPUAN RESEPTIF														Σ	%
		Gelas															
	5	10	15	20	25	30	35	40	45	50	55	60					
	Sesi 1	-	4	15	4	48	-	-	11	-	-	-	6	88	9%		
	Sesi 2	-	9	11	1	52	18	10	-	-	-	1	-	102	10%		
	Sesi 3	-	-	12	7	4	19	2	15	4	-	2	-	65	7%		
	Sesi 4	-	-	14	9	-	4	44	9	-	-	-	-	80	8%		
	Sesi 5	-	-	10	1	9	42	8	-	2	-	-	2	74	7%		
	Sesi 6	-	10	21	4	5	-	47	66	26	-	1	-	180	18%		
	Sesi 7	-	1	12	10	-	34	14	3	-	5	-	-	79	8%		
Sesi 8	-	9	12	15	64	34	3	-	-	-	-	1	138	14%			
Sesi 9	-	5	15	11	43	9	-	-	-	1	-	1	85	9%			
Sesi 10	-	11	9	21	48	-	2	-	-	4	9	1	105	11%			
TOTAL		0	49	131	83	273	160	130	104	32	10	13	11	996			
Prosent		0%	5%	13%	8%	27%	16%	13%	10%	3%	1%	1%	1%		100%		
TREATMENT/ INTERVENSI (B)	60 Menit	KEMAMPUAN RESEPTIF														Σ	%
		Piring															
	5	10	15	20	25	30	35	40	45	50	55	60					
	Sesi 1	-	4	12	2	3	17	-	5	-	-	-	1	44	5%		
	Sesi 2	-	5	12	10	22	7	-	-	1	-	-	-	57	7%		
	Sesi 3	-	-	12	11	3	-	36	15	8	-	3	-	88	10%		
	Sesi 4	-	-	12	9	2	3	-	46	21	3	-	1	97	11%		
	Sesi 5	-	-	13	-	6	22	5	7	-	-	-	2	55	6%		
	Sesi 6	-	10	20	16	19	-	7	-	-	60	5	1	138	16%		
	Sesi 7	-	1	16	10	-	-	-	-	-	21	-	-	48	6%		
Sesi 8	-	3	16	10	5	-	80	13	-	-	1	1	129	15%			
Sesi 9	-	5	17	13	-	-	9	38	-	15	-	2	99	12%			
Sesi 10	-	10	10	14	23	22	7	-	-	1	9	1	97	11%			
TOTAL		0	38	140	95	83	71	144	124	124	100	18	9	852			
Prosent		0%	4%	16%	11%	10%	8%	17%	15%	15%	12%	2%	1%		100%		
TREATMENT/ INTERVENSI (B)	60 Menit	KEMAMPUAN RESEPTIF														Σ	%
		Minum															
	5	10	15	20	25	30	35	40	45	50	55	60					
	Sesi 1	-	-	6	7	-	1	14	24	10	5	4	5	76	10%		
	Sesi 2	-	-	5	4	3	-	-	-	13	15	19	2	61	8%		
	Sesi 3	-	-	3	15	3	-	10	-	17	-	2	2	52	7%		
	Sesi 4	-	-	5	10	17	3	-	-	-	33	48	1	117	15%		
	Sesi 5	-	-	-	10	5	-	-	-	46	1	13	2	77	10%		
	Sesi 6	-	-	-	14	3	1	6	-	6	-	30	21	81	10%		
	Sesi 7	-	-	3	26	-	-	-	-	-	-	12	11	52	7%		
Sesi 8	-	-	11	8	-	-	-	-	31	15	8	1	74	9%			
Sesi 9	-	-	4	22	-	-	-	-	-	47	17	7	97	12%			
Sesi 10	-	-	7	-	-	-	53	18	-	2	11	11	102	13%			
TOTAL		0	0	44	116	31	5	83	42	123	118	164	63	789			
Prosent		0%	0%	6%	15%	4%	1%	11%	5%	16%	15%	21%	8%		100%		
TREATMENT/ INTERVENSI (B)	60 Menit	KEMAMPUAN RESEPTIF														Σ	%
		Makan															
	5	10	15	20	25	30	35	40	45	50	55	60					
	Sesi 1	-	-	6	9	-	1	-	-	18	10	3	3	50	8%		
	Sesi 2	-	-	6	7	4	-	-	-	13	-	19	2	51	8%		
	Sesi 3	-	-	2	9	2	-	-	-	14	13	2	-	42	7%		
	Sesi 4	-	-	5	7	18	4	-	-	-	-	5	8	47	8%		
	Sesi 5	-	-	-	8	7	-	-	-	-	-	64	10	89	15%		
	Sesi 6	-	-	1	9	8	-	6	-	6	-	-	-	56	14%		
	Sesi 7	-	-	5	16	-	-	-	-	-	-	12	11	44	7%		
Sesi 8	-	-	15	10	1	1	-	-	-	-	68	21	116	19%			
Sesi 9	-	-	20	4	-	-	-	-	-	-	-	45	69	11%			
Sesi 10	-	-	-	8	2	-	-	-	-	4	2	-	16	3%			
TOTAL		0	0	60	87	42	6	6	0	37	28	186	158	610			
Prosent		0%	0%	10%	14%	7%	1%	1%	0%	6%	5%	30%	26%		100%		

BASELINE 2 (A2)	30 Menit	KEMAMPUAN EKSPRESIF															
		Gelas								Piring							
		5	10	15	20	25	30	Σ	%	5	10	15	20	25	30	Σ	%
	Sesi 1	-	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
	Sesi 2	-	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
	Sesi 3	-	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
	Sesi 4	-	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
	Sesi 5	-	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
	TOTAL	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0	0%
	Prosentase	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	30 Menit	KEMAMPUAN EKSPRESIF															
		Minum								Makan							
		5	10	15	20	25	30	Σ	%	5	10	15	20	25	30	Σ	%
	Sesi 1	4	-	-	-	-	-	4	100%	-	-	-	-	-	-	0	0%
	Sesi 2	-	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
	Sesi 3	-	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
	Sesi 4	-	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
	Sesi 5	-	-	-	-	-	-	0	0%	-	-	-	-	-	-	0	0%
	TOTAL	4	0	0	0	0	0	4	100%	0	0	0	0	0	0	0	0%
	Prosentase	100%	0%	0%	0%	0%	0%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%

3.2 Discussion

The findings of this study indicate that articulation exercises are a more effective intervention than educational toys for improving the verbal communication skills of children with cerebral palsy and dysarthria. These results reinforce the view that exercises focusing on the coordination of speech organs can enhance phoneme production accuracy and speech clarity. For children with dysarthria, the systematic repetition of articulatory movements contributes to improved speech motor control, thereby making speech more intelligible.

The results of this study align with research by Goncalves (2021), which indicates that children with cerebral palsy experience impairments in phonology, articulation, syntax, and lexical development. However, as that study was a systematic literature review, it did not yield an intervention model that could be directly implemented. The present study addresses this gap by providing empirical evidence regarding the effectiveness of articulation exercises as an intervention strategy for children with cerebral palsy and dysarthria.

Furthermore, research by Liu and Chen (2021) demonstrates that articulation impairments in individuals with cerebral palsy can be identified through acoustic analysis based on consonantal landmarks. However, that study focused on diagnosis and did not develop a speech rehabilitation program. The results of the present study extend those findings by showing that systematic articulation exercises can significantly improve the verbal communication abilities of the research subjects.

The use of educational play tools also contributes positively to the enhancement of verbal communication, particularly by boosting children's motivation, attention, and confidence in communicating. These findings align with research by Viora and Pebriana (2024), which indicates that interactive learning media can improve students' speaking confidence and participation in the learning process. However, that study focused on students in mainstream primary schools and did not examine children with speech-motor disorders. The present study demonstrates that educational game media also holds potential as a support for communication therapy in children with cerebral palsy when combined with articulation exercises.



In the field of special education, the findings of this study complement the research by Winarsih et al. (2023) and Wahyuni et al. (2024) regarding the effectiveness of the Maternal Reflective Method (MRM). Those studies demonstrated that a reflective approach could enhance communication and language comprehension in children with hearing impairments. However, their focus was limited to hearing impairment. This study expands the scope of research by demonstrating that verbal communication interventions are also effective for children with cerebral palsy who have speech-motor impairments, utilizing an articulation training approach enriched with educational media.

This study also confirms that a child's physical and psychological condition influences the success of the intervention. When subjects experience fatigue or health issues, their verbal communication abilities tend to decline, even after undergoing intensive training. These findings indicate that communication therapy relies not only on teaching methods but must also take into account the child's physiological readiness, motivation, and emotional state. Consequently, a therapy program that is continuous and flexible and involves teachers, therapists, and families is a crucial factor in supporting the verbal communication development of children with cerebral palsy.

3.3 Research Contribution (Novelty)

This study makes three key contributions to the fields of applied linguistics and inclusive education. First, it provides empirical evidence regarding the effectiveness of articulation exercises versus educational games for children with cerebral palsy and dysarthria, utilizing a Single-Subject Research (SSR) design. Second, it addresses a gap in prior research, which has largely focused on typically developing children or those with hearing impairments rather than children with speech motor disorders. Third, the findings indicate that combining articulation exercises with educational game-based media has the potential to serve as a foundation for developing multisensory-based learning or communication therapy models in future research.

CONCLUSION

Theoretical Contribution

This study extends applied linguistics research on the verbal communication of children with cerebral palsy by demonstrating that improvements in speaking ability are influenced not only by articulation exercises but also by the use of educational media that boost communication motivation. These findings complement previous studies that primarily focused on language acquisition or the characteristics of communication disorders without directly testing the effectiveness of interventions.

Practical Contribution

The study's results offer alternative instructional strategies that special education teachers, speech therapists, and parents can implement to enhance the verbal communication of children with cerebral palsy by combining articulation exercises with educational game-based media.

Methodological Contribution

The use of a Single-Subject Research (SSR) design enables an in-depth, individualized evaluation of verbal communication development. This approach provides more detailed empirical evidence regarding changes in communication behavior during the intervention process compared to the descriptive approaches commonly used in earlier studies.

This study aimed to analyze the effects of articulation exercises and the use of educational play tools on the verbal communication skills of children with cerebral palsy and dysarthria, employing a Single-Subject Research (SSR) design. The results indicate that both interventions positively influenced the improvement of verbal communication skills; however, articulation exercises contributed more significantly than the use of educational play tools. Articulation exercises enhanced phoneme production clarity, pronunciation accuracy, and verbal responsiveness, whereas educational play tools played a role in increasing the children's attention, motivation, and engagement during the learning process.

This study also indicates that the success of the intervention is influenced by the child's physical and psychological condition. Therefore, the communication therapy program needs to be implemented on a continuous and individualized basis, taking into account the learners' physiological readiness to ensure optimal intervention outcomes.

This study provides empirical evidence that a combination of articulation exercises and educational game-based media can serve as an alternative verbal communication learning strategy for children with cerebral palsy and dysarthria. These findings address a gap in previous research, which has largely focused on language acquisition among children with special needs or hearing impairments, or on the diagnosis of speech disorders, without directly evaluating the effectiveness of verbal communication interventions for children with cerebral palsy.

Future research should involve larger sample sizes and a wider range of cerebral palsy types, while also developing intervention models that incorporate digital technology, speech recognition, artificial intelligence (AI), and multisensory approaches to enhance the effectiveness of verbal communication therapy.

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