

## Hand Gestures and Phoneme Imitation Skills Based Instructional Program for Improving Written Expression-among Students with Writing Difficulties

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### Abstract

*The study sought to define the effectiveness of an instructional program based on the use of hand gestures and Phoneme imitation skills in improving in improving expression-written language among students with writing difficulties in Jordan. The study sample consisted of (32) students with writing difficulties from third and fourth basic grades selected purposefully and distributed randomly into two equal groups one experimental taught using the instructional program, the other control taught using the traditional method. To achieve the objectives of the study, expression-written language skills test was used. The study revealed statistically significant differences in the mean scores of the post-test of the study groups on expression-written language skills test, in favor of the experimental group taught using the instructional program. In light of the results, recommendations were provided.*

**Keywords:** *Instructional Program, Hand Gestures, Phoneme Imitation Skills, Expression-Written Language, Students with Writing Difficulties.*

### 1 Introduction

Learning difficulties are one of the most common special education categories in public schools, that are still shadowy, as students with learning difficulties have some developmental issues that may have shown in early childhood, evolved, and reflected on their performance when they entered school, and this made them experience academic problems since they are unable to learn in the same way as their peers do. Poor early detection, accurate diagnosis, inexperience in providing them with appropriate programs, and teacher's lack of knowledge about how to help them learn basic skills (Writing, reading, math) which they have problems in, in an innovative method suits and mitigates these problems are considered a reason for them to be within the marginalized group in the class.

In relation to writing difficulties, Fletcher-Flinn (2016) stated that it happens as a result of a dysfunction in one of the parts of the brain that is responsible for processing information, which in turn leads to face difficulties in learning how to write. Students with writing difficulties make the same mistakes associated with switching or replacing letters, writing in uneven font, and using letters and punctuation marks, which is due to the incomplete formation of high mental activity that causes difficulties in acquiring the writing skill. In addition to the previously mentioned difficulties, students with writing difficulties face difficulties in the consistency of handwriting, copying, spelling mistakes,

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and problems with expression and letter pronunciation, which leads to face problems in the written expressive language (Tafti & Abdolrahmani, 2014).

Phonemic awareness is related to the student's ability to toning, vocalizing, mixing sounds to form syllables, and then mix them to form a word. Vocal awareness is divided into two categories: The main phoneme which is the main part of the construct of the word such as "ba" and "ta", and the secondary phoneme which refers to any meaningful or valuable vocal phenomenon of speech such as the volume of the sound (tone and toning "speech music") (Khasawneh, Alkhalwaldeh & Hamad, 2018).

Furthermore, hand gestures are considered an effective strategy in teaching students with learning difficulties, this strategy followed by teachers could be a helpful, effective, and meaningful strategy in the teaching process. Hand gestures represent any physical movement (ex. Hand waving to indicate movement, and Pointing and moving the thumb finger) that is frequently unintentional and natural in the communication process, it may provide important supplementary information that may not be easily transmitted through the spoken language alone. Hand gestures can be used with spoken language in order to provide an explanation of ideas in a meaningful way by teachers and students. For example, a person may say "I ran all the way up" while moving his thumb finger upwards spirally, and the listener understands that the stair is spiral (Hord et al., 2016).

In relation to the effectiveness of phoneme awareness and hand gestures, Al-Shorbajy and her colleagues (2017) indicated that phonemic and phonological awareness program can improve the reading performance of first-grade basic education students. Clough and Hilverman (2018) also pointed out the fact that hand gestures are a helpful strategy in children learning and their acquisition of mathematics concepts. In addition to that, Holcomb, Golos, Moses and Broadrick (2021) found that there is a positive effect of using hand gestures in developing phoneme awareness among deaf students, and Schneider, Krieglstein, Beege and Rey (2022) revealed that the use of hand gestures and facial expressions are effective strategies in delivering learning content.

As indicated in previous literature, using hand gestures as an instructional strategy has proven to be very effective in improving different aspects of leaning process among average students and students with special needs such as deaf students. Therefore, the researcher argues that this study is one of the rare studies that examined the use of hand gestures and phoneme imitation for a miluratig writing skills among students with writing difficulties, and this is the main objective of the study.

### 1.1 Problem of the Study

Writing difficulties are considered one of the major public health problems among students around the world, as the prevalence of writing difficulties between them ranges from (6%-33%). These disorders have negative effect on academic performance, and mostly it is related to learning difficulties such as pronunciation, forming and constructing words and sentences (Mather & Roberts, 1995).

A set of studies focused on writing difficulties, their reasons, and relevant affecting factors. Young, Rose and Nelson (2015) pointed out that schools no longer provide priorities and time to teach handwriting, and teachers are not trained in the way they must use in training students with writing difficulties on writing and related skills such as holding a pen, placing the paper, and the body position which are considered an important aspect in mastering writing.

Thus, the problem of this study lies in addressing an instructional program that helps students with writing difficulties in learning writing skills using hand gestures in conjunction with training them on phonemic awareness of the sounds of the letters, then syllables and words to form the word, and retrieving it from memory, where the teachers are in need for a supportive innovative program and strategies help them in teaching writing skill for this category in a way that makes the students not forget it.

Based on the above, the problem of the study lies in the following question: "Are there statistically significant differences ( $\alpha = 0.05$ ) between the mean scores of the post-test of the experimental and control groups in the total score and sub-scores in the written expressive language skills test due to the instructional program?"

### 1.2 The Importance of the Study

The theoretical importance stems from the fact that the study will enrich the previous literature related to the importance of teaching students with writing difficulties on writing skills using a motivating method for their sensory memory, whereby they attain expressive writing skills from memory. Also, it represents an addition to the educational literature related to the concepts of using hand gestures and phonemes in developing written expressive language skills among students with writing difficulties.

As for the practical significance, it lies in training mainstream teachers to employ hand gestures as a teaching tool for students with writing difficulties to improve their writing skills.

## 2 Methods and Procedures

### 2.1 Design and Sample of the Study

The semi-experimental design was used to achieve the objectives of the study, as the study included (32) students selected purposefully from the third and fourth basic grades, who were diagnosed with writing difficulties in Jordan's Irbid schools. Students were randomly distributed into two equal groups: The experimental group and the control group as follow:

Table 1. Frequencies and percentages of the sample distribution according to grade and group.

Grade	Group		Total	%
	Experimental	Control		
Third Grade	8	8	16	50%
Fourth Grade	8	8	16	50%
Total	16	16	32	100%

### 2.2 Instruments of the Study

In this study, the following instruments were employed:

#### 1- Diagnosis Achievement Test of Expressive Language Skills among Students with Writing Difficulties

The test was developed by reviewing a set of previous studies such as Al-Hawamdeh (2020), Al-Zrekat (2013), Khaleel (2015), and The Jordanian Ministry of Education (2015; 2013; 2018A, 2018B, 2019A; 2019B). The test in its final format included (37) questions distributed on four domains: Considering Arabic writing and spelling rules (25 questions); words (3 questions); sentences (5 questions); paragraphs (4 questions).

### 2.3 Validity and Reliability of the Test

The validity of the test was verified by distributing it on a jury of (12): (2) faculty members at the University of Jordan; (4) supervisors of Arabic curricula and teaching methods, a supervisor in special education, a teacher of special education, (2) third-grade teachers, and (2) fourth-grade teachers; in order to check if the questions were appropriate to the Jordanian learning environment. (80%) of the proposed amendments by the jury were taken into account. While reliability was checked by administering it on a pilot sample consisting of (16) students from Al Qadissiya School at Irbid Governorate, and

internal consistency was calculated by calculating Pearson's correlation factor, its values ranged from (0.83-0.91) for the domains and (0.92) for the total test, which are accepted values for the purposes of the study.

## 2- Instructional Program Based on the Use of Hand Gestures and Phoneme Imitation Skills

The instructional program consists (70) training sessions, four of them for pre and post-assessment, and (66) sessions for administration. The instructional program targets students with writing difficulties in the third and fourth grades. This instructional program sought to provide students with verbalization skills and pronunciation, helping them recall the letter shapes and sounds, to enable them to access writing expression skills without any help, teaching them to produce syllables, and providing them with the ability to form and mixing sounds in order to produce written words. The sessions of the instructional program were assessed through a set of activities asked to be done at the end of each session to ensure that students acquired the skills implemented during the session.

Furthermore, the instructional program sought to provide the teachers in the general education department and source room with a program able to motivate students with writing difficulties to achieve writing expression skills in an exciting and motivational way for audiovisual perception skills, as well as motivating the students to learn how to write and mastering phoneme imitation skills and supporting the use of hand gestures as an instructional tool to help the students and motivating them to learn writing expression skills.

### 2.4 Validity of the Instructional Program

To check face validity of the instructional program, it was presented on a jury of (12) specialists in special education, Speech-Language-Hearing Sciences, and Arabic language. In light of their remarks, some activities were changed, and other activities have been added. The jury suggested to distribute the questions on a set of domains. After the first edit, the domains were (vocabulary, spelling, sentences, paragraphs, content), after the second it become (writing direction, spelling, words, sentences, paragraphs), and in the final edit it become (Considering Arabic writing and spelling rules, words, sentences, paragraphs). Additionally, the questions of the study were (27), and by taking the jury's remarks into consideration, (10) questions were added distributed on the above mentioned domains, including:

- Writing the long syllable with a short one.
- Writing three letter words with a short vocalization from memory.
- Forming meaningful words using different syllables.
- Writing a verb phrase of two words.
- Writing a noun phrase of two words.
- Analyze writing different sentences into words.
- Rewording the following words to be a complete sentence.
- Rewording two consecutive sentences to become with a meaning.
- Write short sentence of three words or more about a specific subject.
- Write two sentences to form an interrelated paragraph, taking into account the rules of Arabic writing.

The test has been corrected by two teachers of the first three grades and a fourth-grade Arabic teacher. The final test score was (37), the score (1) indicates mastering the intended skill, and the score (0) indicates unmastering the intended skill.

### 2.5 Description of the Instructional Program

The instructional program used the following teaching methods:

- The program has been implemented individually, after the student masters the basic writing skills (Defining the name and sound of the letter and writing its short and long syllables), he gets transferred into a group instruction system; in order to teach him to write the words, sentences, and paragraphs.
- The duration of the individual session is (15) minutes, and the group session is (30) minutes.
- It is required by the student to pronounce the phoneme of all the letters (A-Z "أ-ي"), links them to hand gestures, and writing them from the memory in the individual sessions.
- Linge method has been used in teaching the students how to analyze the phoneme of the Arabic static consonant letter (Alef "أ") in concurrent with the representation and writing of the hand gesture of the letter.
- Phoneme method was used in concurrent with the representation and writing of the hand gesture of the short and long syllable.
- The student is required to write the long and short vocalization from the memory successfully 100%.
- A repetitive modeling method has been used for the above.

## 2.6 Sessions of the Instructional Program

The instructional program used the following teaching methods:

- Spelling the vowel sounds of the letters (a "أ", w "و", y "ي") in concurrent with being represented using hand gestures for each language sound and to be retrieved from memory.
- Spelling the consonant sounds of the letters (b "ب", t "ت", th "ث", j "ج", h "ح", kh "خ", d "د", dh "ذ", r "ر", z "ز", s "س", sh "ش", ṣ "ص", ḍ "ض", ṭ "ط", ḏ "ظ", ' ayn "ع", gh "غ", f "ف", q "ق", k "ك", l "ل", m "م", n "ن", h "ه", w "و", y "ي") in concurrent with being represented using hand gestures for each language sound and to be retrieved from memory.
- Writing words of three letters that have no meaning using Syllable method, in concurrent with being represented using hand gestures.
- The student analysis the words presented to him in writing.
- The student writes meaningful words using Word methods, concurrent with being represented using hand gestures and phonemes.
- The student takes into consideration the rules of Arabic writing when a paragraph is presented to him.
- The student reorders a set of words to present a complete sentence.
- The student repeats two sentences having the same meaning.
- The student writes a sentence of three words, taking into consideration the rules of Arabic writing (punctuation).
- The student writes an interrelated paragraph of two sentences about a specific topic.

### 3 Results of the Study Question

Are there statistically significant differences ( $\alpha = 0.05$ ) between the mean scores of the post-test of the experimental and control groups in the total score and sub-scores in the written expressive language skills test due to the instructional program?

Means and standard deviations were calculated for the pre and post-scores of the students with writing difficulties on the total score of the written expressive language skills test.

Table 2. Means and standard deviations of the students with writing difficulties scores in the pre and post-test

Test	Group	Number	Pre		Post	
			Mean	Std. Devi.	Mean	Std. Devi.
Test of Expressive Language Skills	Experimental	16	26.09	16.27	1115.44	12.22
	Control	16	26.56	11.41	55.53	9.13
	Total	32	26.33	13.82	85.48	32.23

The above table shows that there are apparent differences between the mean scores of the students with writing difficulties scores in the test of the written expressive language skills in light of the group (Experimental vs Control), in favor of the experimental group ( $M = 115.44$ ). In order to define if these differences were statistically significant ( $\alpha = 0.05$ ), ANCOVA was calculated as seen in table (4).

Table 3. ANCOVA results of the to find the significance of the differences in the scores of students with writing difficulties on the total score of the written expressive language skills test

Source	Sum of Squares	df	Mean Scores	F	Sig.	$\eta^2$
written expressive language skills	756.582	1	756.582	8.023	0.008	0.217
Group	28862.314	1	28862.314	306.081	0.000	0.913
Error	266043.750	32				
Total Score	32201.242	31				

\* Significance at ( $\alpha = 0.05$ )

The previous table shows statistically significant differences ( $\alpha = 0.05$ ) in the scores of the students with writing difficulties on the test of written expressive language skills in light of the group (Experimental vs Control) ( $F = 306.081$ ,  $Sig. = 0.000$ ). In order to define the effect size, Eta square was calculated ( $\eta^2 = 0.913$ ), and this explains (91.3%) of the variance in students with writing difficulties scores in the test of written expressive language skills in light of the group (Experimental vs Control), while the rest is due to other uncontrolled factors. In order to identify the significance of the differences according to the group (Experimental vs Control), modified post-test mean scores were calculated for the scores of the study groups as seen in table (5).

Table 4. Modified post-test mean scores and standard errors of the groups scores on the test of written expressive language skills

Test	Group	Modified Mean Scores	Standard Error
Written Expressive Language Skills	Experimental	115.52	2.43
	Control	55.45	2.43

Table (5) clarifies that the modified post-test mean score of the total score of the test for the experimental group was (115.52) which is higher than the control group ( $M = 55.45$ ). This indicates that the differences are in favor of the experimental group that was subjected to the instructional program, and this demonstrates the effectiveness of the instructional program in improving the written expressive language skills of the students with writing difficulties. In order to define the effectiveness of the instructional programs on the test domains, mean scores, and standard deviations were calculated for the study groups on the domains of the pre and post-test.

Table 5. Mean scores and Standard Deviations of the Study Groups Scores on the Domains of the Post-Test of Written Expressive Language Skills

Domain	Group	Pre		Post	
		Mean Scores	Std. Devi.	Mean Scores	Std. Devi.
Considering Arabic writing and spelling rules	Experimental	23.78	15.06	96.06	10.84
	Control	24.47	10.71	46.88	7.21
	Sum	24.13	12.86	71.47	26.58
Words	Experimental	1.06	0.68	6.91	1.49
	Control	0.78	0.55	2.81	1.59
	Sum	0.92	0.62	4.86	2.57
Sentences	Experimental	1.19	1.48	7	1.11
	Control	1.31	1.49	2.84	1.21
	Sum	1.25	1.46	4.92	2.4
Paragraphs	Experimental	0.06	0.25	5.47	1.67
	Control	0	0	3	1.74
	Sum	0.03	0.18	4.23	2.09

It can be noted from the table (6) that there are apparent differences between the mean scores of the groups' scores in the domains of the post-test in light of the group (Experimental vs Control), in favor of the experimental group. The experimental group got a higher score than the control group in the post-test considering Arabic writing and spelling rules ( $M = 96.06$ ), they also got a higher score than the control group in the post-test words ( $M = 6.91$ ). In relation to the post-test sentences, the experimental group's mean score (7.00) is higher than the control group ( $M = 2.84$ ). It also got a higher score in the post-test paragraphs ( $M = 5.47$ ). In order to define if these differences were statistically significant ( $\alpha = 0.05$ ), MANCOVA was calculated as seen in the following table.

Table 6. MANCOVA results to find the significance of the differences in the scores of study groups on the domains of the post-test of written expressive language skills

Source	Domains	Sum of Squares	df	Mean Scores	F	Sig.	$\eta^2$
Pre-Test Considering Arabic writing and spelling rules	Post-Test Considering Arabic writing and spelling rules	377.773	1	377.773	5.791	0.024*	0.182
Pre-Test Words	Post-Test Words	0.005	1	0.005	0.002	0.961	0.000
Pre-Test Sentences	Post-Test Sentences	0.696	1	0.696	0.607	0.443	0.023
Pre-Test Paragraphs	Post-Test Paragraphs	11.637	1	11.637	4.266	0.049*	0.141

Group Hotelling 13.602 Sig. 0.000	Trace:	Post-Test Considering Arabic writing and spelling rules	18077.169	1	18077.169	277.105	0.000*	0.914
		Post-Test Words	142.047	1	142.047	69.879	0.000*	0.826
		Post-Test Sentences	141.915	1	141.915	123.814	0.000*	0.729
		Post-Test Paragraphs	57.112	1	57.112	20.936	0.000	0.446
Error		Post-Test Considering Arabic writing and spelling rules	1696.133	26	65.236			
		Post-Test Words	52.852	26	2.033			
		Post-Test Sentences	29.801	26	1.146			
		Post-Test Paragraphs	70.925	26	2.728			
Modified Total		Post-Test Considering Arabic writing and spelling rules	21898.969	31				
		Post-Test Words	205.117	31				
		Post-Test Sentences	178.555	31				
		Post-Test Paragraphs	135.992	31				

\* Significance at ( $\alpha = 0.05$ )

Table (7) indicates that there are statistically significant differences at ( $\alpha = 0.05$ ) in the scores of the study groups in the domains of the post-test in light of the group (Experimental vs Control). The value of Hotelling Trace was (13.602, Sig. 0.000), and the value of (F) in relation to considering Arabic writing and spelling rules was (277.105, sig. 0.000). To define the effect size of the instructional program, Eta square was calculated ( $\eta^2 = 0.914$ ), and this means that (91.4%) of the variance of the scores of the students with writing difficulties in considering Arabic writing and spelling rules is referred to the group. Moreover, the value of (F) in relation to words was (69.879, sig. 0.000,  $\eta^2 = 0.729$ ), which means that (72.9%) of the variance in the scores of the study groups on words is referred to the group. In relation to sentences, F value was (123.814, Sig. 0.000,  $\eta^2 = 0.826$ ), and this means that (82.6%) of the variance in the scores of the study groups on sentences is referred to the group, while the value was (F = 20.936, Sig. 0.000,  $\eta^2 = 0.446$ ) in relation to paragraphs, which indicates that (44.6%) of the variance in the scores of the students with writing difficulties on paragraphs is referred to the group, while the rest is due to other uncontrolled factors.

To identify the significance of the differences according to the group (Experimental vs Control), modified post-test mean scores were calculated for the scores of the study groups as seen in table (8).

Table 7. Modified post-test mean scores and standard errors of the groups scores on the domains of written expressive language skills test

Domain	Group	Modified Mean Scores	Standard Error
Considering Arabic writing and spelling rules	Experimental	96.14	2.06
	Control	46.79	2.06
Words	Experimental	7.05	0.36
	Control	2.67	0.36
Sentences	Experimental	7.11	0.27



	Control	2.74	0.27
Paragraphs	Experimental	5.62	0.42
	Control	2.85	0.42

Table (8) shows that the modified post-test mean score for the scores of students with writing difficulties in considering Arabic writing and spelling rules for the experimental group was (M = 96.14), which is higher than the score of the control group (M = 46.79). In relation to words, it was (7.05) which is also higher than the score of the control group (2.67). Moreover, the students of the experimental group scored higher scores than the control group in both sentences and paragraphs (7.11, 5.62). This indicates that the differences in the domains of the written expressive language skills test were in favor of the experimental group, signifying the effectiveness of the instructional program in improving the domains of expressive language skills of students with writing difficulties. The following is a chart showing the mean scores of students with writing difficulties in the total score of the pre and post-test.

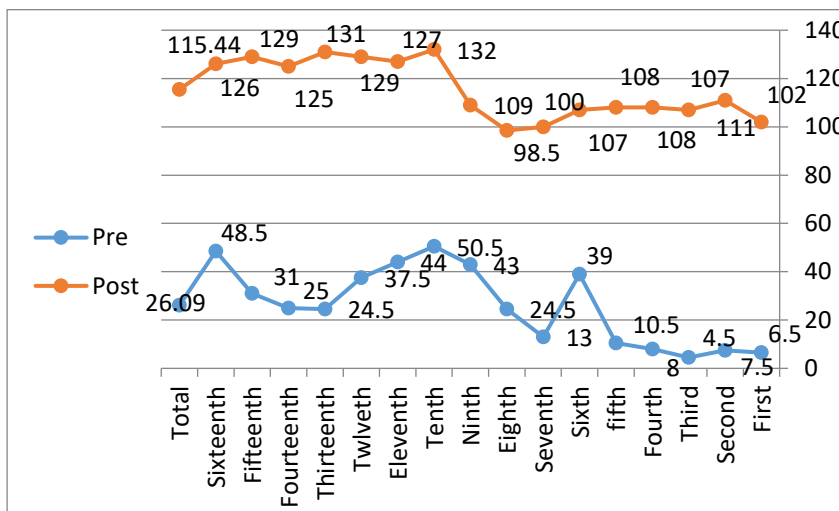


Figure 1. Mean score of students with writing difficulties in the total score of expressive language skills pre and post-test

Additionally, the percentage of the improvement of the experimental group in the total mean scores and the domains of the expressive language skills pre and post-test was calculated, as table (9) shows.

Table 8. Means and improvement percentage on the total score and domains of the pre and post-test of the expressive language skills

Domain	Pre	Post	Improvement Percentage
Considering Arabic writing and spelling rules	23.78	96.06	62.58
Words	1.06	6.91	73.13
Sentences	1.19	7.00	83.00
Paragraphs	0.06	5.47	67.63
Total	26.09	115.44	64.51

It is clear from table (9) that the total mean score of the experimental group post-test was (115.44) which is higher than their pre-test score (26.09), and the improvement percentage in the expressive language skills was (64.51%).

The mean score of the experimental group in the post-test of considering Arabic writing and spelling rules was (96.06) which is higher than their score in the pre-test (23.78), the improvement percentage in this domain was (62.58%). The mean score of the same group in the post-test of words was (6.91) which is higher than the score of the pre-test (1.06), with (550%) improvement percentage. Regarding the post-test of sentences for the experimental group, the mean score was (7.00) which is higher than their score in the pre-test (1.19), and their improvement percentage was (83%). Additionally, the improvement percentage for them in paragraphs was (67.63%) as their mean score in the post-test of paragraphs was (5.47) which is also higher than their score in the pre-test (0.06). The following is a chart showing the mean scores of students with writing difficulties in the total score and domains of the pre and post-test of the expressive language skills.

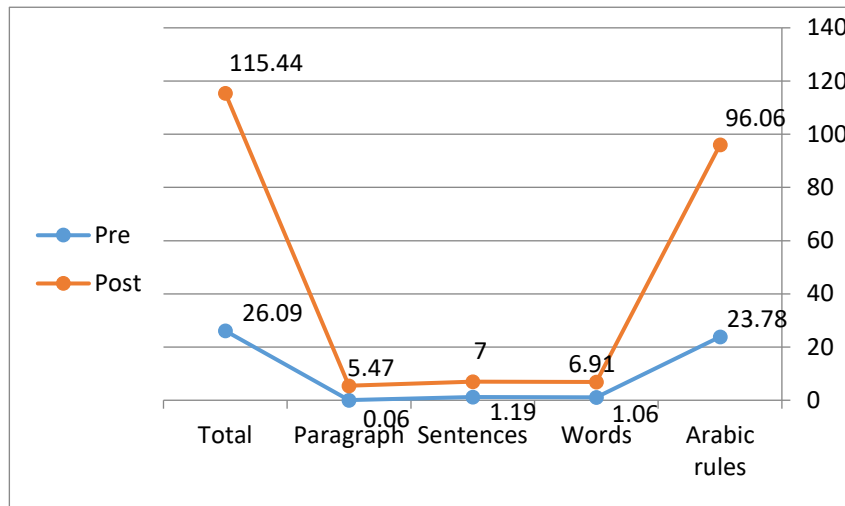


Figure 2. Mean score of the experimental group in the total score and domains of the pre and post-test expressive language skills

#### 4 Discussion

The results of the study showed statistically significant differences in the mean scores of the post-test for the study groups (Experimental vs Control) on the total score of the expressive language skills test in favor of the experimental group that was subjected to the instructional program which signifies the effectiveness of the instructional program in improving the written expressive language skills of the students with writing difficulties. This result can be attributed to the fact that the instructional program used in this study is based on students' imitation of hand gestures the teacher gives before them. Bearing in mind that expressive language is based on the imitation of hand movement; thus the effectiveness of the instructional program can be attributed to the fact that the teacher effectively conveys the knowledge he possesses to the students by motivating and encouraging them to imitate his movements which are the basis of the process of learning to write. Furthermore, hand gestures are a set of spontaneous moves carried out during the performance of a specific task, and this indicates that the teacher moves his hands while talking and call the students to imitate them which in turn develops behavioral and cognitive skills that are relatively simple that gradually evolve into automatic movements. The fact that the implementation of the instructional program took a long time, as it lasted for a full semester increased its effectiveness.

The results also indicated that the effect size of the instructional program based on the use of hand gestures reached (303.94%) regarding the skill of considering Arabic writing and spelling rules, which confirms that this program that is based on imitation is able to enhance students' achievement in this skill. Besides, considering that the current study sample was students with writing difficulties, do not mean that these students necessarily

have a low level of intelligence; their low achievement levels in writing skills can be due to the use of ineffective educational strategies. Since the strategy used in the current study has proven its effectiveness in different contexts, especially in learning a language for a long time (Berninger & Colwell, 1985), so the clear effect of the instructional program on this skill can be attributed to the fact that the researcher used hand gestures in describing the letters clearly and imitating it before the students, as well as giving them sufficient time to correct their mistakes. Plus, the researcher presented immediate corrective feedback which contributed in making students correct their mistakes. Regarding words skill the percentage of improvement was (550%), and this indicates that working on improving expressive written skill generally provide students with the opportunities to acquire a rich vocabulary repertoire as a result of interacting with the written material. Moreover, the percentage of improvement in the skills of sentences was (489%), pointing to the fact that the improvement process occurred among the students in the simple and complex skills since acquiring a set of new vocabularies and words positively contributes to their acquisition of appropriate writing mechanisms to construct complete sentences. In addition to that, students with writing difficulties in the current study recognized that the current instructional program has a set of interesting learning activities, as imitating hand movement is considered a type of playing for them considering their age. Finally, the percentage of improvement in paragraph skill was (865%), which reflects that the instructional program worked on developing basic skills such as acquiring vocabulary and complying with the key Arabic language writing rules; which necessarily led to the mastering of writing sentences and paragraphs.

## 5 Recommendations

In light of the results, the study recommends to implement an instructional program based on the use of hand gestures and phoneme imitation skills to provide students with learning disabilities with reading and numeracy skills. Also, the study recommends training teachers in learning resource rooms on using hand gestures as part of the teaching process provided for students with learning difficulties. Finally, future studies are needed that address the effectiveness of such programs for teaching language skills to students at higher grade levels.

### Conflicts of Interest Statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Ethics Statement

This research did not require ethical approval. Data Availability Statement Data associated with the manuscript is public and has been referenced appropriately.

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