

## The Effectiveness of Employing Metalinguistic Awareness in Improving Reading Skills

Mohammad F. Hawamdeh<sup>1</sup>, Shadi Beirat<sup>2</sup>, Mohammed Alzyoudi<sup>3</sup> and Abdallah Alshdaifat<sup>4</sup>

### Abstract

*This study not only presents significant findings but also invites the audience to be part of the solution. It aimed to examine the effectiveness of employing Metalinguistic Awareness in improving the reading skills of third graders. To achieve its objectives, the study applied a special assessment tool for reading approved by the Jordanian Ministry of Education. The sample of the study consisted of (60) male and female students chosen from a school affiliated with the Aljoun Education Directorate. The students were divided randomly into control and experimental groups. Each group consisted of (30) male and female students. The results, which are of paramount importance, indicated that statistical significances were observed in the reading skills attributed to the teaching method in favour of the experimental group, in the reading skills due to gender in favour of female students, and in the reading skills due to the interaction between the teaching method and gender in favour of female students. This study, in a spirit of collaboration, recommends practical steps for planning Arabic language programs, including incorporating exercises in the activities, making exercises based on awareness of metalinguistic skills (phonology and morphology), and holding training workshops that deal with the educational program based on metalinguistic awareness skills for Arabic language teachers. These recommendations, when implemented, have the potential to significantly enhance reading skills in third graders, with the collective effort of all involved in the education sector.*

**Keywords:** *Metalinguistic Awareness, Phonemic, Morphological Awareness, Reading Skills.*

### INTRODUCTION

Reading, a fundamental skill in the learning and teaching processes, holds immense importance. It is a tool students use to communicate with their surrounding environment and in learning another language, especially in the primary stage. However, this crucial goal may not be achieved due to several problems, including: the teaching methods, student aptitude, and educational policy. Consequently, students often matriculate with poor reading skills and may fail in other courses. The results of many studies, such as (Telfah & Al-Hawamdah, 2023), have underscored the critical importance of teaching reading skills generally to primary stage students and particularly to first graders.

Reading is considered as an interactive and transformative mental process in which the reader discusses the meaning while reading to understand, interpret, and build meaning based on their mental abilities, such as thinking, intelligence, and analysis. The reader does not get the meaning from the text that was read without discussing the text through several factors, such as the reader's background knowledge about the subject and the purpose of the reading process. As a result, the reader understands what s/he is reading, can criticize the text, and use it to solve real-life problems (Ashour & Al-Hawamdeh, 2012; Abd Al-Bari, 2010).

The Arabic language consists of an integrated linguistic system and follows fixed rules and assets. This system consists of the following levels: the phonetic level (phonology), the morphemic level (morphology), the grammatical level, and the semantic level. These levels are linked by interrelated relationships (Al-Qaisi, 2010). The researchers believe these linguistic levels overlap and constitute a complete system, whether applied to

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<sup>1</sup> Mohamed Bin Zayed University for Humanities, Abu Dhabi. E-mail: [Mohammad.Alhawamdeh@mbzuh.ac.ae](mailto:Mohammad.Alhawamdeh@mbzuh.ac.ae). <https://orcid.org/0000-0001-6711-3956>

<sup>2</sup> Independent Researcher. E-mail: [beiratshadi@gmail.com](mailto:beiratshadi@gmail.com). <https://orcid.org/0009-0007-2047-2303>

<sup>3</sup> Mohamed Bin Zayed University for Humanities, Abu Dhabi. E-mail: [mohammed.alzyoudi@mbzuh.ac.ae](mailto:mohammed.alzyoudi@mbzuh.ac.ae). <https://orcid.org/0000-0002-0068-3396>

<sup>4</sup> Mohamed Bin Zayed University for Humanities, Abu Dhabi. E-mail: [abdallah.alshdaifat@mbzuh.ac.ae](mailto:abdallah.alshdaifat@mbzuh.ac.ae). <https://orcid.org/0000-0002-9692-3242>

Arabic or other languages. These levels come in the following order: the phonetic level, the morphological level, the grammatical level, and the semantic level.

Teachers may use tasks in the classroom that develop metalinguistic awareness, the background behind teaching phonics for early literacy and the seemingly short ‘throw-away’ tasks for more advanced learners, which involve exercises such as the categorization of words into parts of speech (nouns, verbs, adjectives, etc.) and finding synonyms. However, far from being ‘thrown away’, such tasks awaken metalinguistic awareness. Phonological and phonemic awareness is one of these language components concerned with the study of sounds, the ability to use vocabulary, and the perception of meanings to read. Phonemic awareness is one of the terms of linguistic phonology that deals with language at the level of letters, while phonological awareness is concerned with phonetic syllables, words and sentences. Therefore, these two skills are the main pillars for mastering reading (Elhoweris et al., 2017; Montaser et al., 2014).

The importance of phonological and phonemic awareness is to know the phonetic aspects of speech as they are necessary to learn spelling. To have an active reader, the student must learn the difference between letters and their sounds, recognising that words consist of sounds that are essential to understand letter-sound correspondences. Students who acquire phonological awareness skills can learn to read, spell, and pronounce words correctly (Alzyoudi, 2022; Suleiman, 2006; Abu Al-Diyar et al., 2012). The researchers believe that this reflects the importance and necessity of phonemic awareness in the educational process, as without it, students will lose their ability to read because they will not be able to understand what sounds represent, recognise them, correctly identify them, and divide them into words, which will reflect negatively on their academic performance.

## **CONTEXT AND LITERATURE REVIEW**

Lonigan et al. (2000) and others have stated that the phonetic level is associated with reading, which is considered one of the most important indicators of reading problems among primary-stage students. Barbosa et al. (2009) indicated that students with reading impairments have deficiencies in language skills, such as knowing the meaning of words, using grammar, and determining the sounds of words.

The results of several studies, such as alzyoudi et al. (2022) and Rvachew et al. (2007), stated that there is a relationship between poor phonological awareness skills and poor language skills among students. All the processes that aim at developing student phonological awareness skills in their primary stages can improve their understanding of language, its pronunciation, its expression, and speech fluency. On the other hand, the study of Qawi and Hafsi (2021) asserted the importance of phonemic awareness in teaching Arabic language skills in the primary stages. The results of Montaser et al. (2014) study revealed a positive correlation between phonemic and phonological awareness and reading skills. The lower the level of phonemic and phonological awareness, the greater the problem of reading weakness among students.

The morphological level (morphology) is one of the Arabic language levels and one of the important linguistic sciences in building words. Morphology plays an important role in language skill acquisition and phonemic awareness by using vocabulary correctly and knowing its meaning. Due to the importance of morphological awareness in the learning and teaching process, the Queen Rania Foundation, in partnership with the Ministry of Education and the Queen Rania Teacher Academy, implemented the pilot project for morphological awareness methodology in 2018. The results showed an improvement in the performance of students trained in morphological awareness. 70% of the students reported that the program helped them learn Arabic and that there was an improvement in their reading and comprehension skills, as well as their ability to form words and sentences (Queen Rania Foundation, 2018).

The results of the study of Anwar & Rosa (2020) and Amuhairy, et al. (2016) showed that morphological awareness plays an important role in facilitating English language learning in the middle stage and concluded that students who were taught by using morphological skills performed better in their English language learning and used language accurately. In the same context, the study of Avazmatova et al. (2020) and Alzyoudi and, Al Baker, (2018) indicated that reading comprehension is related to morphological awareness. The use of morphological knowledge leads to understanding the meaning of the text and facilitates the reading process.

In recent studies, researchers have explored various aspects of education, including the impact of school factors on mathematics achievements, the implementation of educational philosophies, and the integration of augmented reality in STEM education. For instance, Wardat et al. (2022) investigated the influence of school factors on students' mathematics achievements in the Trends in International Mathematics and Science Study (TIMSS) in Abu Dhabi Emirate Schools. In another study, Jarrah, Khasawneh, and Wardat (2020) examined the implementation of pragmatism and John Dewey's educational philosophy in Emirati elementary schools, focusing on mathematics and science teachers. Hidayat and Wardat (2023) systematically reviewed augmented reality in STEM education, highlighting its potential benefits and challenges.

Furthermore, Wardat, Jarrah, and Stoica (2021) explored middle school students' understanding of the equal sign in the United Arab Emirates, emphasising the need for improved mathematical comprehension. Gningue et al. (2022) analysed the relationship between teacher leadership and school climate, revealing significant insights from a teacher-leadership project. Tashtoush et al. (2022) evaluated the effectiveness of a training program based on TIMSS in developing habits of mind and mathematical reasoning skills among pre-service mathematics teachers. Additionally, Tashtoush, Wardat, and Elsayed (2023) investigated mathematics distance learning and learning loss during the COVID-19 pandemic, presenting teachers' perspectives on the challenges and solutions.

These studies collectively contribute to a deeper understanding of various educational factors and their implications for teaching and learning, providing valuable insights for educators and policymakers (Wardat et al., 2022; Jarrah et al., 2020; Hidayat & Wardat, 2023; Wardat et al., 2021; Gningue et al., 2022; Tashtoush et al., 2022; Tashtoush et al., 2023).

The study of Huneety et al. (2023) and Makhoul (2017) showed a positive association between phonemic awareness and reading. The sample in the study consisted of (206) first graders who spoke Arabic in Palestine. The study by Abu Mandeel (2018) showed that phonological awareness exercises significantly impact the development of reading skills among fourth graders. Tibi and Kirby (2018) conducted a study to verify phonemic awareness's impact on rapid naming skills, predict Arabic language readers, and measure general cognitive ability, vocabulary, phonemic awareness, reading words, and reading comprehension. The study sample consisted of (201) third graders in Dubai. The results showed that phonemic awareness and rapid naming skills are important for predicting, although phonemic awareness is considered the main feature of Arabic language, spelling, and reading levels.

Recent research has highlighted the effectiveness of various educational interventions and technological integrations in enhancing student performance. For example, Alneyadi et al. (2023) examined the impact of a smart e-learning app on the academic achievement of eighth-grade students, finding significant improvements. Additionally, Alneyadi et al. (2023) compared the effects of digital environments versus traditional methods on literacy skills, specifically reading and writing, among Emirati fourth graders. Their findings indicated that digital environments can positively influence literacy development.

Moreover, integrating information and communication technologies (ICT) in education has shown promising results. Tashtoush et al. (2023) explored the impact of ICT-based education on students' enthusiasm for mathematics, revealing increased academic engagement. Furthermore, Jarrah, Wardat, and Gningue (2022) investigated misconceptions about the addition and subtraction of fractions among seventh-grade students, providing insights into common errors and effective teaching strategies.

In the context of teacher satisfaction, Zakariya and Wardat (2023) conducted an empirical investigation into the contributions of teacher self-efficacy and motivation to teach, identifying significant factors that influence job satisfaction among mathematics teachers. Additionally, Wardat et al. (2024) examined mathematics teachers' perspectives on the use of artificial intelligence in education, discussing both the potential benefits and challenges.

These studies collectively underscore the importance of innovative educational practices and technological advancements in improving student outcomes and teacher satisfaction (Alneyadi et al., 2023; Alneyadi et al., 2023; Tashtoush et al., 2023; Jarrah et al., 2022; Zakariya & Wardat, 2023; Wardat et al., 2024).

## **Problem Statement**

During field visits to schools to supervise and follow up with students, the researchers noticed the poor level of student reading skills and increased complaints from teachers and parents, especially in the light of the COVID-19 pandemic and the subsequent closure of educational institutions, the interruption of face-to-face teaching, and shift to distance learning. These factors negatively impacted all students, particularly those in the primary stages.

Several studies, such as those of Lerner (2000) and Lyon et al. (2003), showed that about 85% of children with learning difficulties suffer from phonemic awareness problems. The studies of Ben-Shachar et al. (2007) and Peeters et al. (2009) showed that the reasons behind reading difficulty and poor spelling skills were the weakness of phonetic awareness and the correlation between acquiring phonological awareness skills and learning to read.

The study of Michael et al. (2018) showed that morphological awareness plays an important role in comprehension, understanding texts, vocabulary acquisition, and language skills that are necessary for learning foreign languages. Implementing the Reading and Numeracy Initiative for Early Grades in Jordan (RAMP) significantly improved student reading performance (Early et al., 2019).

The Queen Rania Foundation (QRF) pilot project, conducted in partnership with the Ministry of Education and the Queen Rania Teacher Academy in 2018, showed the importance of teaching morphological awareness to primary stage students to develop their reading and writing skills. Researchers were encouraged to conduct this study because there is little research available on the impact of educational programs based on metalinguistic awareness (phonology and morphology) on improving reading skills. Therefore, there is a need to initiate educational programs that are capable of improving language skills in general and reading skills in particular, in order to help learners to become more creative thinkers and express their feelings without restrictions. This study sheds light on the effectiveness of an educational program based on metalinguistic awareness (phonology and morphology) in improving the reading skills of third graders in Jordan. The problem of the study can be identified by answering the following main question:

Is there any statistical significance at the ( $\alpha = 0.05$ ) level between the arithmetic means of the sample's performance in the test of combined reading skills and individually at each reading skill, attributed to the teaching strategy—the educational program based on metalinguistic awareness (phonology and morphology)—vs. the standard method, as well as the gender of students?

## **Significance**

The significance of the study is in the following:

**First: Theoretical.** Improving the knowledge of using educational programs based on metalinguistic awareness (phonology and morphology) in the learning and teaching processes and linking that awareness to improving the reading skills of third graders. According to the literature review, this study is one of the first that links the use of phonological and morphological awareness with teaching reading skills. The study of metalinguistic awareness (phonology and morphology) is considered as one of the modern strategies in teaching primary stage students, it provides Arabic literature with new information and teachers with ways to treat students that have poor reading skills.

**Second: Practical.** The study attempts to provide an educational program based on metalinguistic awareness (phonology and morphology) for Arabic language teachers that goes with technological and cognitive development to raise the level of student reading performance. The study also benefits those who are responsible for making the curriculum in the Ministry of Education to provide the necessary programs to improve reading skills. Finally, the study can provide useful information to the researchers in this field as well as teachers and students at all educational levels. This is due to the importance of phonological and morphological awareness in improving the level of reading skills among students, and to shed light on the study of the phonological and morphological awareness to overcome student reading problems in the primary stage and to focus on phonological and morphological awareness in the educational learning process, especially in the primary stage.

## **METHODS**

The current study used the quasi-experimental approach, a pre-post design of two unequal groups. The sample of this study consisted of (60) male and female third graders in the first semester of the academic year (2021/2022). They were selected intentionally from Osara Secondary School for Girls of the Directorate of Education of Ajloun Governorate. Students were distributed randomly into two study groups. The first group is the control group which consists of (30) male and female students (16 female and 14 male students), while the second group is the experimental group and consists of (30) male and female students (17 female and 13 male students).

### **Study Tools**

#### **First: The Educational Program Based on Metalinguistic Awareness (Phonology and Morphology).**

The researchers of the present study designed an educational program based on metalinguistic awareness skills according to the standards of the designing of the educational programs. The educational program consisted of eight phonological awareness skills: (distinguishing, splitting, classification, isolation, deletion, addition, blending, and substitution), the general objectives, the importance, the activities, and the necessary procedures to apply each skill. The educational program also consisted of eight morphological awareness skills: (extracting the root of the word, judging the relationship between words, knowing the foreign word, producing some derivatives through a specific context, knowing nearly all the roots of the word, understanding and dealing with suffixes, the morphological liquidity of prefixes, and the morphological liquidity of suffixes), the general objectives, the importance, the activities and the necessary procedures to apply each skill.

The educational program aimed to improve the reading skills of third graders, and the suitability of the program was verified by presenting it to a jury specialized in the field of Arabic language curricula, teaching methods, and educational psychology. The jury's opinions and observations were as follows: reconsidering the number of phonological and morphological awareness skills, linguistic formulation of some skills, and increasing the number of examples for each skill.

#### **Second: The Reading Skills Test**

To achieve the objectives of the study, the researchers adopted the special reading evaluation tool (Ministry of Education, 2021) approved by the Jordanian Ministry of Education. The tool is considered as a standardized test, applied to each student individually, and aims to measure the level of improvement of third graders in four basic reading skills: phonological awareness (3 questions), vocabulary (4 questions), reading the sounds of letters (12 questions), and reading comprehension (one main reading question consisting of 4 reading comprehension questions).

#### **The Validity of the Test (Content)**

To ensure the validity of the content, the test was submitted to a validation jury and their opinions were taken into consideration. The necessary changes were made considering their opinions.

#### **Test Reliability**

To verify the validity of the reading skills test, it was piloted and re-applied two weeks after the first application to a sample of 20 male and female students from the population of the study, and those students were excluded from the sample. The researcher calculated the Pearson correlation coefficient between the degree of the paragraph and the total score of the skill. Then, the researcher calculated the corrected correlation coefficient between the degree of the paragraph and the total score of the skill (corrected item-total correlation).

The results showed that the correlation coefficient (Pearson) between the degree of the paragraph and the total score of the skill ranged between (0.50) and (0.79) for the phonological awareness, between (0.52) and (0.84) for the vocabulary skill, between (0.41) and (0.82) for the skill of reading the sounds of letters, and between

(0.51) and (0.74) for the reading comprehension skill. All the aforementioned skills have statistical significance ( $P < .05$ ), and higher than the threshold value (.35), which indicated the reliability of the reading skills test.

**Test Consistency**

To verify the consistency of the reading skills test, the researcher calculated the Cronbach’s alpha coefficients (internal consistency) of the test domains, the test, and the stability of the consistency coefficient (re-applied). The results showed that Cronbach's alpha coefficients ranged between (0.74) and (0.80) for the four test dimensions and was (0.85) for the whole test. The repetition stability coefficients ranged from (0.77) to (0.81) for the four test dimensions and was (0.88) for the whole test. All the above were higher than the threshold value (0.70), and therefore the reading skills test has a high degree of stability.

**Study Variables**

**First:** The independent variable. The teaching strategy has two levels: the educational program based on metalinguistic awareness (phonology and morphology), and the usual strategy.

**Second:** The dependent variable. The reading skills of third graders.

**Third:** The taxonomic variables: gender.

**FINDINGS**

The results related to the question of the study: “Is there any statistically significance, at the ( $\alpha = 0.05$ ) significance level, between the arithmetic means of the sample’s performance in the test of combined reading skills and individually on each reading skill attributed to the teaching strategy, the educational program based on metalinguistic awareness (phonology and morphology), the usual method, gender, and the interaction between them?” To answer this question, the means and standard deviations of student performance in reading skills were calculated together according to the teaching strategy, gender, and the interaction between them, as shown in Table (1).

**Table 1: Means and standard deviations of student performance in reading skills combined according to the teaching strategy, gender, and their interaction.**

The Group	Gender	Pre-test performance		Post-test performance	
		Mean	Std. Deviation	Mean	Std. deviation
The Experimental group	Male	22.667	2.093	43.667	3.638
	Female	20.533	2.100	46.133	5.668
	Total	21.600	2.328	44.900	4.845
The Control group	Male	22.133	1.685	23.533	12.005
	Female	22.533	2.200	34.533	11.160
	Total	22.333	1.936	29.033	12.689
Total	Male	22.400	1.886	33.600	13.446
	Female	21.533	2.345	40.333	10.509
	Total	21.967	2.155	36.967	12.437

Table (1) shows that there is a difference between the mean of the post-test of the two study groups in the reading skills when they are combined, as the mean of the experimental group was (Mean = 44.900; SD=4.845), and the mean of the control group was (29.033). It is also noted that there is a difference between the mean of male and female student performance, as the mean of the male students was (33.600) and the mean of the female students was (40.333). It is also noted that there are differences between the mean of the performance of the two study groups according to gender (interaction between the educational program and gender), as the mean of the male students in the experimental group was (33.600), the mean of the male students in the control group was (40.333), the mean of the female students in the experimental group was (33.600), and the mean of the female students in the control group was (40.333).

As shown in Table (2) the two-way ANOVA was conducted to test the statistical significance in the post-test performance after controlling the effect of the pre-test performance in the combined reading skills, according to the teaching strategy, gender, and the interaction between them.

**Table 2: Results of the two-way ANOVA of the statistical significance test of the differences in student post-test performance after controlling the effect of pre-test performance of combined reading skills according to the teaching strategy, gender, and their interaction.**

Source	Sum of Squares	Degrees of Freedom	Sum of Squares	F Statistic	Statistical Significance	Eta Squared
Pre-test Performance	115.344	1	115.344	1.482	.229	.026
Educational Program	3413.934	1	3413.934	43.858	.000	.444
Gender	535.691	1	535.691	6.882	.011	.111
Educational Program * Gender	362.001	1	362.001	4.651	.035	.078
Error	4281.189	55	77.840			
Total	9118.00	60				
Total Average	9125.933	59				

Table (2) shows that there is a statistical significant between the mean of the performance of the experimental group and the control group in combined reading skills in favor of the experimental group. In other words, the educational program based on metalinguistic awareness (phonology and morphology) had a statistically significant effect on combined reading skills. The value of the ETA squared (0.444) indicates that the educational program explains 44.4% of the performance variation in combined reading skills. The results of the analysis of variance showed a statistical significance between the mean of the performance of the male and female students in combined reading skills in favor of female students. In other words, the gender variable had a statistically significant effect on combined reading skills, and the ETA squared value (0.111) indicates that the gender variable explains 11.1% of the performance variance of combined reading skills.

The results also show that there was a statistical significance between the mean of the performance of male and female students in the two study groups (male-experimental group, male-control group, female-experimental group, female-control group). The ETA squared value (0.078) indicates that the interaction between the teaching strategy and gender explains 7.8% of the performance variation in combined reading skills. In other words, the performance of the two study groups varies according to gender in favor of female students. The mean and standard deviations of the performance of the sample of the study in reading skills were calculated individually, according to the teaching strategy, gender, and the interaction between gender and the educational program, as shown in Table (3).

**Table 3: Means and standard deviations of the pre-test and post-test performance in reading skills individually, according to the variables of the teaching strategy and gender.**

Skill	Group	Gender	Mean	Std. Deviation
Phonological Awareness	Experimental	Male	7.067	.961
		Female	7.800	.941
		Total	7.433	1.006
	Control	Male	3.333	2.664
		Female	5.400	2.197
		Total	4.367	2.619
	Total	Male	5.200	2.734
		Female	6.600	2.061
		Total	5.900	2.502
Vocabulary	Experimental	Male	7.667	.724
		Female	7.867	1.187
		Total	7.767	.971
	Control	Male	3.733	2.120
		Female	5.200	2.651
		Total	4.467	2.474
	Total	Male	5.700	2.535
		Female	6.533	2.432
		Total	6.117	2.498
Reading the Sounds of Letters	Experimental	Male	8.933	1.280
		Female	10.000	1.512
		Total	9.467	1.479
	Control	Male	6.733	2.120
		Female	8.200	1.568
		Total	7.467	1.978
	Total	Male	7.833	2.052
		Female	9.100	1.769
		Total	8.467	2.004
Reading Comprehension	Experimental	Male	20.000	1.604
		Female	20.467	2.973
		Total	20.233	2.359
	Control	Male	9.733	5.763
		Female	15.7333	5.574
		Total	12.733	6.351
	Total	Male	14.867	6.673
		Female	18.100	5.006
		Total	16.483	6.072

As shown in Table (3), there were differences between the mean of the performance of the experimental group and the control group in the post-test performance in the four reading skills, as the mean of the performance of the experimental group members in the phonological awareness skill was (7.433), in vocabulary was (7.767), in reading the sounds of letters was (9.467), and in reading comprehension was (20.233), while the mean of the performance of the control group members in the phonological awareness skill was (4.367), in vocabulary was (4.467), in reading the sounds of letters was (7.467), and in reading comprehension was (12.733). It is also noted that there were differences between the mean of the performance of the male and female students, as the mean of the male student performance in phonological awareness skill was (5.200), in vocabulary was (5.700), in reading the sounds of letters was (7.833), and in reading comprehension was (14.867), while the mean of the female student performance in phonological awareness skill was (6.600), in vocabulary was (6.533), in reading



the letters' sounds was (9.100), and in the reading comprehension was (18.100). It is also noted that there are differences between the mean of the four groups (male–experimental group, male–control group, female–experimental group, female–control group), as the mean performance of the four groups in the phonological awareness skill was respectively: (7.067), (3.333), (7.800), and (5.400). The mean performance of the four groups in the vocabulary skill was as follows: (7.667), (3.733), (7.867), and (5.200). The mean performance of the four groups in the reading the sounds of letters skill was as follows: (8.933), (6.733), (10.000), and (8.200). Finally, the mean performance of the four groups in the reading comprehension skill was: (20.000), (9.733), (20.467), and (15.733).

Table (4) illustrates the two-way ANOVA that was conducted to test the statistical significance in the post-test performance after controlling the effect of pre-test performance on individual reading skills, according to the teaching strategy, gender, and the interaction between them.

**Table 4: Results of the two-way ANCOVA of the statistical significance test of the differences in student post-test performance after controlling the effect of pre-test performance of reading skills according to the teaching strategy, gender, and their interaction.**

ANCOVA	Reading Skills	Sum of the Squares	Degrees of Freedom	Sum of the Squares	F Statistic	Statistical Significance	Eta Squared
Educational Program	Morphological Awareness	133.571	1	133.571	39.222	.000	.430 .467
	Vocabulary	149.788	1	149.788	45.576	.000	.295
	Reading the Sounds of Letters	60.612	1	60.612	21.810	.000	.432
	Reading Comprehension	772.238	1	772.238	39.588	.000	
Gender	Phonological Awareness	11.889	1	11.889	3.491	.067	.063 .020
	Vocabulary	3.455	1	3.455	1.051	.310	.050
	Reading the Sounds of Letters	7.538	1	7.538	2.713	.106	.073
	Reading Comprehension	79.835	1	79.835	4.093	.048	
Gender* educational program	Phonological Awareness	6.956	1	6.956	2.043	.159	.038 .039 .002
	Vocabulary	6.933	1	6.933	2.110	.152	.092
	Reading the Sounds of Letters	.282	1	.282	.102	.751	
	Reading Comprehension	102.395	1	102.395	5.249	.026	
Error	Phonological Awareness	3.405	52	177.085			
	Vocabulary	3.287	52	170.901			
	Reading the Sounds of Letters	2.779	52	144.511			
	Reading Comprehension	19.507	52	1014.361			
Total	Phonological Awareness		60	2458.000			
	Vocabulary		60	2613.000			
	Reading the Sounds of Letters		60	4538.000			
	Reading Comprehension		60	18477.000			

As shown in Table (4), there was statistical significance ( $\alpha = 0.05$ ) between the mean performance of the experimental group and the control group in favor of the experimental group in the four reading skills. The ETA squared values (0.430, 0.467, 0.295 and 0.432) indicate that the educational program variable (43%, 46.7%, 29.5%, and 43.2%) explains the variation in the performance in the reading skills respectively: phonological awareness, the vocabulary, reading the sounds of letters, and reading comprehension. The results showed a statistical significance ( $\alpha = 0.05$ ) between the mean performance of male and female students in the reading comprehension skill. The ETA squared value (0.073) indicates that the gender variable explains 7.3% of the performance variation in the reading comprehension skill. The results showed a statistical significance ( $\alpha = 0.05$ ) between the mean performance of male and female students in the two study groups: (male–experimental group, male–control group, female–experimental group, female–control group) in the reading comprehension skill. The ETA squared value (0.092) indicates that the interaction between teaching strategy and gender explains 9.2% of the performance variation in the reading comprehension skill.

## **DISCUSSION AND CONCLUSION**

The results related to the study question showed that there was a statistical significance in the performance of the sample of the post-test in the combined and individual reading skills, due to the variable of the teaching strategy: the educational program based on metalinguistic awareness (phonology and morphology), and the usual method; in favor of the experimental group performance that was subjected to teaching using the educational program, where the null hypothesis was rejected, and the alternative hypothesis was supported.

This result indicates the effectiveness of the educational program based on metalinguistic awareness (phonology and morphology) in improving reading skills. The researchers attribute this to the fact that the process of employing educational programs in the teaching process, including the exercises and practical activities, raises student motivation to learn, encouraged self-learning, moves away from traditional methods, helps to improve the methods of teaching reading skills to students, as the educational programs had been prepared, designed, and employed properly.

This may also be because the educational program has several characteristics, as: the textual clarity and simplicity of the tools used in the education process. In addition, the process of interaction between students during the implementation of each educational session aroused their attention, interests, and tendencies towards the learning process. The educational program can also help teachers save time as they follow-up with students and supervise them during the reading session. During this educational program, the learner was the focus in the reading process, which led to the improvement of student reading skills in favor of the experimental group. (Rajab, 2007) and (Matar, 2009) stated that students' reading skills can be developed through educational programs.

This result was consistent with several previous studies, most of which found an impact of the teaching method on student achievement in the Arabic language and other subjects. The results of the following studies showed that there was a statistical significance due to the method of teaching using educational programs based on phonological and morphological awareness skills (Al-Shorbagy et al., 2017), (Makhoul, 2017), (Abu Mandeel, 2018), (Tibi & Kirby, 2018), (Omriani, 2019), (Kandil, 2021), (Qiao et al., 2021), (Dodur, 2021), (Vaknin-Nusbaum, 2021).

The results showed that there was a statistical significance in the performance of the sample of the post-test in the combined reading skills, and individually in the reading comprehension skill in favor of the gender variable; and in favor of the female students in the experimental group, where the null hypothesis was partially rejected and the alternative hypothesis was supported.

This result shows that the equal impact of the educational program on the scores of the post-test for male and female students in reading skills (phonological awareness, vocabulary, and reading the sounds of letters), which indicates that the degree of impact of the educational program on the achievement was the same for all students in these skills, whether they were male or female students. In addition, both male and female students acquired the phonological and morphological awareness skills. On the other hand, the researchers realized that the reading comprehension skill was significantly affected and improved among the experimental group of female

students. The researchers attribute the superiority of the performance of the experimental group of female students in the reading comprehension skill over the male to the fact that female students are good listeners and adhere to the instructions. Haji (2008) pointed out that female students outperform male students in language ability tests at this age.

In addition, female students spend more time at home with adults, which gives them a stronger linguistic outcome, the ability to control it, and an increase in vocabulary and experiences to perceive the abstract meanings of language. This result is confirmed by (Sukar & Ghanem, 2011). Additionally, this result can also be attributed to higher rates of intermittent absences among male students compared to female students. Another study (Al-Shorbagy et al., 2017) found that there was no statistical significance in the mean test results attributed to the gender variable.

The results also show that there was a statistical significance in the performance of the sample of the post-test in the combined reading skills, and individually in the reading comprehension skill due to the variable of interaction between the teaching strategy and gender. Thus, the greatest impact is attributed to teaching strategy, high to the extent that the interaction did not appear except in the reading comprehension skill. The teaching strategy and gender had a statistical impact on this skill in favor of female students in the experimental group. The researchers attribute this to the method of education and dealing with female students, which encourages them to try, participate, and interact more than male students, so that they can prove themselves and succeed in their lives. In the light of the results of this study, the researchers put forth a few recommendations:

Planning for Arabic language programs, including them in activities, and making exercises based on the metalinguistic awareness skills (phonology and morphology)

Holding training workshops for Arabic language teachers that deal with the educational program based on metalinguistic awareness skills (phonology and morphology).

Conducting further studies that investigate the effectiveness of educational program based on metalinguistic awareness skills (phonology and morphology) in improving other language skills such as: speaking, writing, and listening, in different school stages.

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