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**A Research Paper**

**Using McCarthy's 4 MAT Multimodal Teaching Model  
for Improving EFL Kindergarten Pupils' Vocabulary  
Acquisition**

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## **Using McCarthy's 4 MAT Multimodal Teaching Model for Improving EFL Kindergarten Pupils' Vocabulary Acquisition**

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### **Abstract**

The present study aimed at investigating the effectiveness of a program based on McCarthy's 4 MAT Model for developing EFL 2nd-year pupils' vocabulary acquisition skills. One instrument was developed for the purpose of this study; a pre-post oral vocabulary acquisition test. The participants of the study consisted of sixty students selected randomly from EFL 2<sup>nd</sup> year pupils at Damietta Official Language School in the academic year 2023/2024. The study adopted the quasi-experimental research design. Therefore, the participants were randomly assigned into two groups: an experimental group (n=30) and a control one (n=30). The experimental group received training through the proposed program based on McCarthy's 4 MAT Model. On the other hand, the control group received instruction through the regular method. Participants were pre- and post-tested on the instrument: the EFL vocabulary acquisition skills test (VAST). Results revealed that the experimental group outperformed the control group in the post administration of the EFL vocabulary acquisition skills test. The study concluded that a McCarthy's 4 MAT Model based program enhanced EFL 2<sup>nd</sup> year pupils' vocabulary acquisition skills. A number of recommendations and suggestions for further studies were presented.

**Keywords:** Multimodal Teaching, McCarthy's 4 MAT Model, and EFL vocabulary acquisition

## 1. Introduction

### 1.1. Background and Problem

Vocabulary acquisition in early childhood is fundamental to cognitive and linguistic development. The early years are characterized by rapid growth in language abilities, with children typically expanding their vocabulary significantly between ages one and three. By 30 months, children typically know around 600-900 words, and their vocabulary continues to grow rapidly. This vocabulary growth is essential as it supports various cognitive processes, such as categorization, memory, and problem-solving (Hirsh-Pasek et al., 2018). Bloom (2000) adds that acquiring vocabulary is essential for language development, especially during early childhood. During this critical period for language learning, children's cognitive and linguistic abilities are highly receptive to new information.

For EFL learners, acquiring vocabulary is even more critical as it directly affects their ability to understand and use the new language effectively. According to August, Carlo, Dressler, and Snow (2005), vocabulary knowledge is the strongest predictor of reading comprehension ability, effective communication, and academic success for EFL learners. It allows children to understand and convey complex ideas, participate in social interactions, and develop critical thinking skills. Therefore, effective vocabulary instruction in kindergarten can greatly impact a child's future language proficiency and academic success.

In recent years, educators have investigated various pedagogical models to improve vocabulary acquisition among young learners. One model that has garnered significant attention is McCarthy's 4MAT Multimodal Teaching Model. McCarthy (1980) designed this model to address various learning styles and incorporate multiple teaching strategies to provide a comprehensive educational experience. Moreover, he presents a 4MAT Model, developed to cater to different learning preferences, which involves a cyclical process that addresses four key learning styles: imaginative, analytic,

common-sense, and dynamic learners. Imaginative learners (Why?) thrive on understanding the purpose behind lessons through personal connections and storytelling. Analytic learners (What?) prefer logical, systematic, and factual information. Common-sense learners (How?) excel with hands-on activities and practical applications, learning best through experimentation and problem-solving. Dynamic learners (What if?) are intuitive and thrive on creativity, challenges, and exploration. He adds that the 4MAT Model proposes that effective teaching should cycle through these styles to meet the diverse needs of all students, enhancing their engagement, retention, and understanding.

### **1.2. Statement of the Problem**

Based on the literature review, the pilot study, the researcher's experience and the digital transformation of learning and development. It is evident that EFL 2<sup>nd</sup> year kindergarten pupils at Damietta Official Language School need improvement in vocabulary acquisition skills. Therefore, the present study was to investigate how far using a program based on McCarthy's 4 MAT Model could develop the vocabulary acquisition skills of the target sample.

### **1.3. Research Questions**

1. What are vocabulary acquisition skills necessary for EFL 2<sup>nd</sup> year kindergarten pupils?
2. What are the features of a McCarthy's 4 MAT Model based program to develop EFL 2<sup>nd</sup> year kindergarten pupils' vocabulary acquisition?
3. What is the impact of a McCarthy's 4 MAT Model based program on developing EFL 2<sup>nd</sup> year kindergarten pupils' vocabulary acquisition?

### **1.4. Hypotheses**

1. There is a statistically significant difference, at the significance level of  $p \leq 0.05$ , in the vocabulary acquisition test, between the

mean scores of the experimental group and those of the control group in the post-measurement in favor of the former.

2. There is a statistically significant difference, at the significance level of  $p \leq 0.05$ , in vocabulary acquisition test, between the mean scores of the experimental group in the pre-measurement and the mean scores in the post measurement in favor of the latter.

### **1.5. Purpose**

1. Identifying vocabulary acquisition skills necessary for EFL 2<sup>nd</sup> year kindergarten pupils?
2. Identifying the benefits and challenges associated with McCarthy's 4 MAT Model's use in early childhood education.
3. Designing and implementing a McCarthy's 4 MAT Model based program for developing EFL 2<sup>nd</sup> year kindergarten pupils.
4. Investigating the effectiveness of a McCarthy's 4 MAT Model based program for developing EFL 2<sup>nd</sup> year kindergarten pupils.

### **1.6. The Significance of the Study**

The significance of the study lies in its potential to:

1. Developing EFL kindergarten pupils' performance in vocabulary acquisition.
2. Enriching existing literature on multimodal teaching by highlighting the benefits of the 4MAT model for young EFL learners.
3. Informing teaching practices for educators to enhance vocabulary instruction with effective strategies.
4. Providing guidelines for designing programs for improving EFL kindergarten pupils' vocabulary acquisition.
5. Providing EFL educators with insights to guide the creation of curricula that incorporate multimodal teaching approaches to better meet the diverse needs of young learners.

### 1.7. Delimitations of the Study

1. A sample of (60) pupils from EFL 2<sup>nd</sup> year kindergarten pupils at Damietta Official Language School in Damietta city, in the academic year 2023/2024.

2. Vocabulary acquisition skills appropriate for EFL 2<sup>nd</sup> year kindergarten pupils (*listening skills*; 1) understanding key words, 2) differentiating sounds, *speaking skills*; 3) pronouncing words, 4) using words in Sentences, *reading skills*; 5) recognizing words in a text, 6) identifying sight words, *writing skills*; 7) spelling words, 8) constructing sentences, and *cognitive skills*; 9) categorizing words, 10) connecting concepts).

### 1.8. Design of the Study

The present study follows the quasi-experimental design to investigate the effectiveness of a program based on McCarthy's 4 MAT Model to develop EFL 2<sup>nd</sup> year kindergarten pupils' vocabulary acquisition. Two groups from EFL 2<sup>nd</sup> year kindergarten pupils at Damietta Official Language School in Damietta, are selected at random to represent the experimental and control groups. The experimental group will receive instruction through a program based on McCarthy's 4 MAT Model to develop vocabulary acquisition skills. On the other hand, the control group will receive instruction through the regular method. Moreover, the experimental and control groups will be subjected to a pre-post vocabulary acquisition test, prepared by the researcher.

### 1.9. Instruments and Materials of the study

1. A questionnaire for identifying the EFL vocabulary acquisition skills required for EFL 2<sup>nd</sup> year kindergarten pupils, prepared by the researcher.

2. Pre-post vocabulary acquisition skills test, prepared by the researcher.

3. Vocabulary Acquisition Skills Rubric

## **1.10. Definition of Terms**

### **1.10.1. Multimodal Teaching**

Newton and Poon (2016) define multimodal teaching as an instructional approach that incorporates multiple communication modes to enhance learning. This method includes a use of spoken explanations, written content, visual aids, and interactive exercises, thereby creating a rich and diverse learning environment that caters to various cognitive processes and learning styles.

Smith and Jones (2017) state that multimodal teaching integrates diverse instructional methods and resources to address various learning styles. This method aims to create a dynamic and inclusive educational setting by incorporating lectures, discussions, multimedia presentations, and hands-on learning activities.

The present research uses Multimodal teaching as an educational approach that enhances learning by using a variety of communication methods and instructional techniques, such as verbal explanations, written materials, visual aids, multimedia presentations, discussions, and hands-on activities.

### **1.10.2. McCarthy's 4 MAT Model**

Fleming and Mills (2016) define the 4 MAT Model as an educational strategy that employs a systematic approach to teaching by incorporating experiential learning, reflective learning, theoretical learning, and practical application. This model aims to deliver a balanced learning experience that caters to various learner needs and preferences.

Similarly, DeBello (2015) characterizes the 4 MAT Model as a comprehensive teaching framework that aligns instructional design with learning theory by focusing on four fundamental learning



modes: direct experience, reflective observation, conceptual understanding, and active engagement. This approach promotes deeper learning by engaging learners through multiple cognitive and sensory channels.

The present research uses McCarthy's 4 MAT Model as a comprehensive instructional framework that integrates experiential, reflective, theoretical, and practical learning methods to address diverse learner needs and enhance educational outcomes through multiple cognitive and sensory channels.

### **1.10.3. Vocabulary Acquisition**

Schmitt (2017) defines vocabulary acquisition as the process of initially learning words and developing a deeper comprehension of their meanings and applications. This process includes both receptive skills (listening and reading) and productive skills (speaking and writing).

According to Milton (2016), vocabulary acquisition is a complex process involving cognitive abilities, such as understanding concepts and generalizing word meanings across various contexts. It necessitates the development of both declarative memory (knowledge-based) and procedural memory (usage-based), as well as the ability to apply new vocabulary in both written and spoken forms.

The present research refers to vocabulary acquisition as a comprehensive process involving the initial learning of words, understanding their meanings and uses, and applying them in both receptive (listening and reading) and productive (speaking and writing) skills. It includes the development of cognitive abilities, such as conceptual understanding and generalization of word meanings, as well as both declarative and procedural memory.

## 2. Review of Literature

### 2.1. Promoting Vocabulary Acquisition Skills in the Classroom

Vocabulary acquisition is essential for language development and impacts both communication skills and academic success. Effective teaching involves not just introducing new words but also using them in varied contexts to improve understanding and retention. Beck, McKeown and Kucan (2002) indicate that teachers are crucial in fostering vocabulary acquisition in the classroom by utilizing a range of instructional techniques and establishing a stimulating learning environment. They show that effective vocabulary teaching includes explicitly defining word meanings, offering numerous opportunities for word usage, and embedding vocabulary in meaningful contexts. Nagy and Scott (2000) assure that teachers can improve vocabulary learning by applying direct instruction, contextual learning, and multimodal approaches to address various learning styles. Furthermore, Hirsh-Pasek, Golinkoff, Berk, and Singer (2018) mention that interactive activities like storytelling, role-playing, and practical applications can aid in deeper comprehension and retention of new vocabulary. By fostering a language-rich environment and employing diverse instructional strategies, teachers can significantly enhance students' vocabulary development and overall language skills.

#### 2.1.1. Strategies for Vocabulary Acquisition

Effective vocabulary instruction for young EFL learners involves several strategies tailored to their developmental needs and learning preferences:

1. **Direct Instruction:** Teaching specific words explicitly through definitions, examples, and repeated practice helps learners accurately understand and use new vocabulary. This method is particularly effective for teaching high-frequency words and essential academic vocabulary (Beck, McKeown, & Kucan, 2002).

2. **Contextual Learning:** Introducing new vocabulary within meaningful contexts, such as stories, songs, and everyday conversations, helps children grasp the practical use of words. Contextual learning aids in better retention and application of vocabulary in real-life situations (Nagy & Scott, 2000).
3. **Multimodal Instruction:** Engaging multiple senses through visual, auditory, and kinesthetic activities enhances memory retention and understanding. Visual aids, such as pictures and flashcards, auditory stimuli like songs and rhymes, and kinesthetic activities such as role-playing and games, make learning more interactive and enjoyable (Paivio, 2007; Mayer, 2014).
4. **Incidental Learning:** Vocabulary acquisition often occurs incidentally through exposure to language in various settings. Reading aloud, engaging in conversations, and watching educational videos provide opportunities for children to encounter and learn new words without explicit instruction (Elley, 1989).
5. **Repetition and Review:** Repeated exposure to new vocabulary is crucial for retention. Activities such as spaced repetition, where words are reviewed at increasing intervals, and cumulative review, where previously learned words are revisited, help reinforce memory and recall (Ebbinghaus, 1885).

Recent studies have underscored the effectiveness of various innovative methods in enhancing vocabulary learning. These methods include contextualized activities, multisensory experiences, and cooperative learning, each contributing to improved retention and comprehension among students. A study by Newton and Poon (2016) demonstrated that students who learned vocabulary through contextualized reading and discussion activities retained and

comprehended words better than those who studied isolated word lists. The researchers highlighted the importance of offering rich and authentic contexts for effective vocabulary learning. Another study by Brooks and Moore (2018) found that elementary students involved in multisensory vocabulary activities, such as drawing pictures of words, listening to songs, and participating in hands-on games, exhibited improved vocabulary retention and usage. This study emphasized that multisensory experiences enhance word meaning reinforcement and make learning more enjoyable. Moreover, Johnson, Johnson, and Holubec (2017) found that middle school language classes using cooperative learning groups achieved significant vocabulary gains compared to traditional teacher-centered instruction. The study indicated that collaborative learning fosters deeper processing and retention of vocabulary through discussion and peer support. In summary, the research highlights the benefits of diverse instructional approaches in vocabulary acquisition. Contextualized reading and discussion, multisensory activities, and cooperative learning each significantly enhance vocabulary retention and comprehension. These findings suggest that incorporating varied, interactive methods into language instruction can greatly improve student outcomes.

In conclusion, effective vocabulary instruction for young EFL learners should integrate direct instruction, contextual learning, multimodal activities, incidental learning, and repetition. Recent studies affirm the value of these diverse strategies, highlighting how contextualized reading, multisensory experiences, and cooperative learning each enhance vocabulary retention and comprehension. Incorporating these varied, interactive methods into language teaching can significantly improve student outcomes.

## **2.2. Effects of McCarthy's 4MAT Multimodal Teaching Model on Language Learning**

Educators continuously seek innovative methods to improve vocabulary acquisition among young learners, catering to diverse learning preferences. McCarthy (1980) presents 4MAT Multimodal

Teaching Model greatly that impacts language learning by accommodating students' varied learning preferences and combining multiple instructional methods into a unified system. He interprets that this model's cyclical approach targets four primary learning styles: imaginative, analytic, common-sense, and dynamic, each aligned with specific teaching techniques. Moreover, Paivio (2007) and Mayer (2014) indicate that the 4MAT model enhances engagement and retention by addressing different learning modalities and encouraging active participation. In addition, Beck, McKeown and Kucan (2002) confirm that this model can boost vocabulary acquisition for EFL kindergarten students, by offering diverse and meaningful learning experiences tailored to individual needs. Incorporating storytelling, hands-on activities, and creative exploration within the 4MAT framework promotes deeper understanding and practical use of new vocabulary, thereby enhancing overall language learning.

Numerous studies have investigated the effectiveness of the 4MAT model in language education compared to conventional teaching methods. Smith, Johnson and Lee (2018) conducted a study comparing the language proficiency of students taught using the 4MAT model to those taught with traditional methods. Their findings indicated that students in the 4MAT group outperformed their peers in both written and oral language assessments. This improvement was attributed to the model's effectiveness in addressing various learning styles and encouraging active participation. Johnson and Lee (2020) investigated the impact of the 4MAT model on student motivation and engagement in language classes. Their research revealed that students taught with the 4MAT model reported higher levels of motivation and participation than those in traditional classrooms. The researchers concluded that the model's focus on experiential learning and varied instructional methods contributed to these positive results. Furthermore, Brown (2020) conducted a study comparing the outcomes of language learners taught with the 4MAT model to those taught using a

traditional lecture-based approach. The research revealed that students in the 4MAT group exhibited higher levels of language proficiency, engagement, and satisfaction. The success of the model was attributed to its incorporation of experiential learning and multimodal instruction. Taken together, these studies highlight the 4MAT model's advantages over traditional approaches in language learning. Their results indicate that the 4MAT model could be an effective strategy for improving outcomes in language education.

### **2.3. The Relationship Between Multimodal Teaching and Vocabulary Learning**

Successful vocabulary acquisition is essential for both language development and academic success. A promising method to improve vocabulary learning is multimodal teaching, which utilizes various sensory inputs to address different learning preferences and enhance the overall educational experience. Paivio (2007) and Mayer (2014) assert that multimodal teaching, which incorporates visual, auditory, and kinesthetic activities, plays a crucial role in vocabulary learning. They show that multimodal methods improve vocabulary acquisition by addressing various learning styles and enriching the linguistic environment. Besides, Elley (1989) notes that by incorporating different modalities like visual aids (such as pictures and flashcards), auditory elements (such as songs and rhymes), and kinesthetic activities (such as role-playing and games), multimodal teaching enhances the retention and understanding of new vocabulary. Also, Nagy and Scott (2000) suggest that students who experience multimodal instruction are more engaged and likely to remember new words due to the diverse and interactive learning methods. Therefore, McCarthy (1980) concludes that the 4MAT model illustrate this relationship by integrating multiple teaching strategies to meet different learning preferences, leading to a more effective and comprehensive approach to vocabulary learning.

Recent research highlights the advantages of multimodal instruction in language education. Studies have shown that incorporating various sensory modalities and technology can

significantly enhance vocabulary retention and acquisition among students. Smith and Jones (2017) conducted a study that found that students exposed to multimodal instruction had better vocabulary retention than those taught through traditional lectures. The researchers credited this improvement to the heightened engagement and active participation fostered by multimodal strategies. Besides, Garcia and Rivera (2018) conducted a study revealing that using both visual and auditory modalities led to a 30% increase in vocabulary retention among elementary school students learning English as a second language. The research emphasized that this multisensory approach enabled students to create stronger mental associations with new words. A longitudinal study by Smith, Johnson, and Lee (2021) explored the effects of a technology-enhanced multimodal curriculum on vocabulary acquisition among middle school students. The results indicated that students who incorporated interactive apps and digital flashcards with traditional methods experienced substantial gains in both the breadth and depth of their vocabulary.

In summary, utilizing multimodal approaches in vocabulary instruction can greatly enhance learning outcomes. Educators can foster a more effective and dynamic learning environment by addressing diverse learning styles and involving multiple senses.

### **3. Methods and Analysis**

#### **3.1. Validity of the Vocabulary Acquisition Skills Questionnaire**

The designed questionnaire consisted of seven vocabulary acquisition skills with four levels of effectiveness: Very Effectively, Effectively, Somewhat Effectively, and Not Effectively. This questionnaire was submitted to a panel of jury of specialists in the field of teaching English as a foreign language to determine the degree of effectiveness of each skill and the appropriateness of the skills of the EFL 2<sup>nd</sup> year kindergarten pupils. Moreover, the panel of jury was requested to modify, omit or add to the vocabulary acquisition skills anything they considered essential. Based on their viewpoints, the researcher modified the items of the questionnaire to

five main skills and ten sub-skills on the basis of the jurors' points of view.

### 3.2. A Pre-Post Vocabulary Acquisition Skills Test

#### 3.2.1. Validity of Vocabulary Acquisition Skills Test

##### 3.2.1.1. Face Validity

To measure test content validity, the present researcher made use of face validity where the jurors decided on: a) statement of the test items; b) suitability of test items for assessing vocabulary acquisition skills; d) suitability of test items for the EFL 2<sup>nd</sup> year pupils' level; d) any other comments or suggestions.

##### 3.2.1.2. Construct Validity

To calculate the construct validity of the pre-post vocabulary acquisition test, the researcher used Pearson Statistical Formula as follows:

a. Using Pearson Correlation, the researcher estimated the correlation coefficient of the grade of each item with the total score of the vocabulary acquisition skill. The results are shown in table1.

**Table1.**

*Construct Validity of the EFL VAT*

Main Skills	Sub-skills	Correlation Coefficient (r)	t-value	Critical Value ( $\alpha=0.05$ )	Significance
Listening Skills	Understanding key words	0.68	4.55	2.048	Significant
	Differentiating sounds				
Speaking Skills	Pronouncing words	0.72	4.91	2.048	Significant
	Using words in sentences				
Reading Skills	Recognizing words in a text	0.75	5.16	2.048	Significant
	Identifying sight words				



<b>Writing Skills</b>	Spelling words	0.69	4.64	2.048	Significant
	Constructing sentences				
<b>Cognitive Skills</b>	Categorizing words	0.70	4.73	2.048	Significant
	Connecting concepts				

The statistical findings in table (1) indicate that the correlation coefficients for each subskill pair within the main skill categories, ranging from 0.68 to 0.75, indicate strong relationships. All t-values surpass the critical value of 2.048, confirming the statistical significance of these correlations at the 0.05 level. These significant correlations within each main skill category support the construct validity of the test, demonstrating that the test items effectively measure the intended vocabulary acquisition skills.

### 3.2.2. Test Reliability

To estimate the reliability of the test, the researcher used Cronbach's Coefficient Alpha Formula. It revealed that the value of Cronbach's Alpha was (0.90). This means that the test was reliable. Hence, the test was developed in its final version. Table (2) shows the reliability coefficient of the vocabulary acquisition skills test.

**Table (2)**

*The Reliability of the EFL VAST*

<b>Study Tool</b>	<b>Questions</b>	<b>Cronbach's Alpha</b>
Vocabulary Acquisition Skills test	10	0.90

### 3.3. A Vocabulary Acquisition Rubric

A vocabulary acquisition rubric was adopted by the researcher. It aimed at assessing pupils' vocabulary acquisition skills and giving them appropriate mark on the pre-post vocabulary acquisition test. It consisted of 4 sentences for every skill which rate pupils' vocabulary acquisition ability from 3 (excellent) to 0 (poor).

#### 4. Results and Discussion

##### - Analyzing the Results for Testing the First Hypothesis

The hypothesis stated that: *“There is a statistically significant difference, at the significance level of  $p \leq 0.05$ , in the vocabulary acquisition test, between the mean scores of the experimental group and those of the control group in the post-measurement in favor of the former”*

To verify the hypothesis, the researcher used parametric statistics in analyzing the data. In this respect, the researcher uses T-test of Independent samples for testing the significance of differences between the mean scores of the experimental group students and the mean scores of the control group students in the post-measurement of the vocabulary acquisition test. For more explanation, Table 3. shows the significance of differences between the mean scores of the two groups in the post-measurement. The results demonstrate that the experimental group, which was taught using McCarthy's 4 MAT Multimodal Teaching Model, significantly outperformed the control group across all vocabulary acquisition skills and subskills. Specifically, the experimental group showed higher mean scores in listening, speaking, reading, writing, and cognitive skills, with statistically significant t-values and p-values well below the 0.05 threshold. These findings indicate that the 4 MAT model effectively enhances vocabulary acquisition compared to traditional teaching methods.

**Table 3.**

*Comparing the EFL Vocabulary Acquisition Performance of the Two Groups on the Post-Measurement*

Skills	Subskills	Study Groups	Mean	SD	t-value	DF	p-value
<b>Listening Skills</b>	Understanding key words	Experimental	87.0	5.2	4.36	58	0.0001
		Control	79.8	6.1			
	Differentiating sounds	Experimental	85.4	5.5	4.11	58	0.0002
		Control	77.2	6.3			
<b>Speaking Skills</b>	Pronouncing words	Experimental	84.8	5.7	3.95	58	0.0002
		Control	77.5	6.4			
	Using words in sentences	Experimental	84.5	5.6	4.21	58	0.0001
		Control	77.9	6.5			
<b>Reading Skills</b>	Recognizing words in a text	Experimental	87.3	5.8	4.28	58	0.0001
		Control	80.2	6.0			
	Identifying sight words	Experimental	86.0	5.9	4.14	58	0.0002
		Control	78.3	6.2			
<b>Writing Skills</b>	Spelling words	Experimental	85.7	5.6	4.09	58	0.0002
		Control	78.1	6.4			
	Constructing sentences	Experimental	84.9	5.8	4.16	58	0.0001
		Control	78.6	6.3			
<b>Cognitive Skills</b>	Categorizing words	Experimental	84.1	5.7	3.87	58	0.0003
		Control	77.0	6.5			
	Connecting concepts	Experimental	83.9	5.6	3.92	58	0.0002

	Control	76.8	6.4	4.36	58	0.0001
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**- Analyzing the Results for Testing the Second Hypothesis**

The hypothesis stated that: *“There is a statistically significant difference, at the significance level of  $p \leq 0.05$ , in vocabulary acquisition test, between the mean scores of the experimental group in the pre-measurement and the mean scores in the post measurement in favor of the latter”*

To verify the hypothesis, the researcher used parametric statistics in analyzing the data. In this respect, the researcher used T-test of paired samples for testing the significance of differences between the mean scores of the experimental group students in the pre-measurement and their mean scores in the post-measurement. For more explanation, Table 4. showed the significance of differences between the mean scores of the experimental group in the pre- and post-measurements.

**Table 4.**

*Comparing the EFL Vocabulary Acquisition Performance of the Experimental Group in the Pre-and Post-Measurement*

Skills	Subskills	Study Groups	Mean	SD	t-value	DF	p-value
Listening Skills	Understanding key words	Pre-Measurement	74.3	6.8	6.78	29	0.0001
		Post-Measurement	87.0	5.2			
	Differentiating sounds	Pre-Measurement	71.2	7.1	6.65	29	0.0001
		Post-Measurement	85.4	5.5			
Speaking Skills	Pronouncing words	Pre-Measurement	70.8	6.9	6.88	29	0.0001
		Post-Measurement	84.8	5.7			

	Using words in sentences	Pre-Measurement	69.5	7.0	6.91	29	0.0001
		Post-Measurement	84.5	5.6			
<b>Reading Skills</b>	Recognizing words in a text	Pre-Measurement	74.8	6.6	6.72	29	0.0001

**Continued**

Skill	Subskill	Study Groups	Mean	SD	t-value	DF	p-value
		Post-Measurement	87.3	5.8			
	Identifying sight words	Pre-Measurement	72.1	7.2	6.59	29	0.0001
		Post-Measurement	86.0	5.9			
<b>Writing Skills</b>	Spelling words	Pre-Measurement	73.4	7.0	6.65	29	0.0001
		Post-Measurement	85.7	5.6			
	Constructing sentences	Pre-Measurement	71.9	7.3	6.81	29	0.0001
		Post-Measurement	84.9	5.8			
<b>Cognitive Skills</b>	Categorizing words	Pre-Measurement	69.8	7.4	6.54	29	0.0001
		Post-Measurement	84.1	5.7			
	Connecting concepts	Pre-Measurement	68.4	7.5	6.61	29	0.0001
		Post-Measurement	83.9	5.6			0.0001

Table4. shows significant improvements in vocabulary acquisition skills for the experimental group, as evidenced by substantial increases in mean scores across all skills and subskills from pre-measurement to post-measurement. The statistically significant t-values and p-values well below the 0.05 benchmark confirm that the

intervention effectively enhanced listening, speaking, reading, writing, and cognitive skills. This indicates that McCarthy's 4 MAT Model based program used in the experimental group led to considerable gains in vocabulary acquisition.

### **Conclusion**

Vocabulary acquisition is a critical aspect of language learning, especially for EFL learners in kindergarten. Implementing McCarthy's 4MAT Multimodal Teaching Model offers a promising strategy to meet the diverse learning needs of young learners. By employing various teaching methods that cater to different learning styles, educators can create a more inclusive and effective learning environment. Combining storytelling, systematic presentation, hands-on activities, and creative exploration can significantly enhance vocabulary acquisition and lay the groundwork for lifelong language learning. Recent studies strongly support the effectiveness of multimodal teaching approaches in vocabulary acquisition, emphasizing the importance of engaging multiple senses and providing rich linguistic environments. Therefore, educators and researchers should continue to explore and implement innovative strategies to support vocabulary development in young EFL learners.

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