The Role of Diacritics in Word Recognition and their Impact on Arabic L2 Learners' Reading Speed, Accuracy, and Comprehension at Different Stages of Arabic L2 Acquisition

by

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Abstract

Based on the available instructional materials, practitioners of Arabic as a foreign language are divided into two camps: those who believe that Arabic textbook script should contain diacritics due to their utility in clarifying word pronunciation and meaning and those who believe that Arabic textbook script should not contain diacritics because they could burden the already heavily charged decoding system of Arabic and the learners could become too dependent on diacritics and may encounter later difficulty when reading texts without diacritics. A small number of studies relating to the role of diacritics in Arabic word recognition have been conducted on Arabic as a first language (L1). Even fewer studies have investigated the role of Arabic orthography in word recognition on Arabic as a second language (L2). To fill this gap in Arabic second language acquisition research, the present study examines the role of diacritics in word recognition and their impact on Arabic L2 learners' reading speed, accuracy, and comprehension at different stages of Arabic L2 acquisition. Fifty-four Arabic L2 learners from three proficiency levels (beginner, intermediate, and advanced) participated in this study. The participants belonged to two groups: those who were exposed to instructional materials containing diacritics, vowelized textbook (VT), and those who were exposed to instructional materials not containing diacritics un-vowelized textbook (UVT). Both groups in each level read two lists of isolated words and two types of texts under vowelized (V) and un-vowelized (UV) conditions. In the isolated words reading, the

results indicate that the participants of the VT group significantly read isolated words under both (V) and (UV) conditions at a faster speed than the participants in the corresponding UVT group in all proficiency levels. Moreover, the results show that the beginner, intermediate and advanced participants of the VT group read isolated words more accurately than participants in the corresponding UVT group. In the text reading, results show that participants in the beginner and intermediate VT groups read texts at a significantly faster speed than participants in the corresponding UVT group. Moreover, the beginner, intermediate, and advanced participants in the VT group were more accurate in reading target words in texts than participants in the UVT group. Finally, the results of the comprehension analysis of target words in texts show that the participants in the beginner, intermediate, and advanced VT groups maintained an advantage of target word comprehension over their UVT counterparts. The main result indicates that the participants who relied on VT in their learning program achieved an excellent and more stable reading performance over their counterparts who relied on UVT. This positive role of diacritics in terms of Arabic word recognition and reading performance suggests that including diacritics in words and texts does not only benefit the Arabic L2 learner by removing ambiguity from words, but it also positively influences improvement in reading performance in general.

Chapter 1

Introduction

1.1 Overview

Since the rise of Islam in the seventh century CE, Arabic has been a popular second language to learn because it is the language of the Holy Qur'an, the sacred book of Muslims. Moreover, interest in Arabic as a foreign language has increased for political, economic, educational and other reasons. Researchers have investigated Arabic from several angles to understand how the language works and how it can be efficiently learned. One issue related to teaching Arabic as a second language (L2) is the process of word recognition and how it relates to reading speed, accuracy, and comprehension. Most studies explain the word recognition process of many western languages from a Western point of view (Frost, 2008; Share, 2008). However, when it comes to Arabic the issue needs to be explained from different viewpoints that consider features of languages like Arabic, which has a different structural and writing system.

Since word recognition is an extensive topic that can be studied from several angles, the present study addresses one aspect of Arabic word recognition in terms of reading, which is based on the type of Arabic orthography used when learning Arabic as

an L2. More specifically, this study aims to examine the role of diacritics in Arabic word recognition for Arabic L2 learners.

1.2   Diacritics Practices, Past and Present: A Historical Account

Based on the history of the Arabic writing system, Arabic's orthography progressed through different stages of development, one of which was adding new symbols to Arabic's orthography. This was due to the spread of errors among non-native Arabic speakers who wanted to read and understand the Qur'an, which is written in a script that creates many difficulties related to word recognition. Because it is unacceptable to make mistakes when reading the Holy Qur'an, Arabic scholars and linguists were prompted to improve the Arabic writing system by adding dots and diacritics to Arabic's script to eliminate any ambiguity in Arabic's letters and words (Ismaeel, 2001). Since the development of diacritics in AD eighth century, they have become an integral part of Arabic's written script to facilitate reading and ensure a high level of accuracy and comprehension. This development of the Arabic writing system makes diacritics a vital part of Arabic words that should be considered when investigating any issue related to Arabic's orthography and word recognition, either in Arabic as an L1 or as an L2. One of these issues is supplying or removing diacritics from texts when teaching Arabic as an L2.

In the present day, adding or removing diacritics from Arabic script differs based on the type of text, the purpose, and the audience. For example, sacred texts such as the Qur'an and Hadith are always written with diacritics. Moreover, diacritics are added to

most Arabic literature texts, especially ancient literature, while contemporary everyday writing such as social media posts, emails, newspapers and magazine articles, and so forth are written without diacritics.

Regarding education, diacritics play a role in teaching the Arabic language for Arabic native speakers in the early stages of learning (elementary and middle schools). Therefore, the diacritics are included in their Arabic language textbooks. This emphasis on learning Arabic text with diacritics continues even in the later stages (secondary school and higher education) of learning, relying on texts from various sources that still contain diacritics—though to a lesser extent.

However, there are several opinions about teaching Arabic for L2 learners. Some believe that, as with Arabic as a first language, diacritics should be considered when teaching Arabic as a second language due to their utility in clarifying word pronunciations and meanings. The diacritics facilitate the process of reading acquisition. Others believe that teaching Arabic by using diacritics will not only be useless but could also hinder learners' progress in reading acquisition. Hence, Arabic as an L2 is thought to use several types of instructional materials that add or remove the diacritics from Arabic textbooks.

1.3   Previous Studies on Diacritics

To dispel this debate, research is needed. However, based on the existing studies, it can be seen that most studies relating to diacritics (vowelization) were conducted with native speakers. Only a few studies have investigated the role of diacritics in word recognition

for learners of Arabic as a second language. Most studies on Arabic as a first language (L1) support the claim that diacritics (short vowels) are an important factor that facilitate word recognition and reading for Arabic readers' accuracy and comprehension. Additionally, studies on languages with orthographic features similar to Arabic (e.g., Hebrew and Persian) support the claim that diacritics facilitate word recognition for readers (Baluch, 1992; Shimron & Sivan, 1994; Schiff, 2012). The few existing studies on Arabic as a second language (L2) and word recognition discuss Arabic script and orthography from different foci. For example, Khaldieh (1996) investigated the Arabic visual system only for Arabic letters that have the same shape. Showelter and Hayes-Harb (2015) examined whether learners can benefit from written forms made up of unfamiliar orthography (Arabic graphemes) to make inferences about words' phonological forms (Arabic phonemes).

In fact, only two studies of Arabic as an L2 focused on the vowelization issue (Khaldieh, 2001; Hansen, 2010). Khaldieh (2001) addressed this issue in terms of *ʔiʕrāb* "grammatical endings", which focuses on diacritics as inflectional endings only. Hansen (2010) investigated the role of short vowels—but with limitations relating to the design and procedure of the study discussed in detail in the next chapter.

The present study contributes to the study of vowelization concerning the internal short vowels of Arabic words and their role in Arabic L2 learners' reading speed, accuracy, and comprehension at different stages of Arabic L2 acquisition.

1.4   Objectives of the Dissertation

Based on the available instructional materials, practitioners of Arabic as a foreign language are divided into two camps: (a) Those who believe that Arabic textbooks should contain diacritics due to their role in clarifying word pronunciation and meaning and (b) Those who believe that Arabic textbooks should not contain diacritics because L2 learners can handle texts without diacritics, and they think that reliance on diacritics could burden the heavily charged decoding system of Arabic. The latter group is concerned that learners could become too dependent on diacritics and may later encounter difficulty when reading texts without diacritics. By examining methods for teaching Arabic to native speakers in Arabic countries (and based on most of the studies conducted on Arabic L1 learners), we can find answers as to how this problem is perceived and addressed in Arabic L1. To pursue this issue further, the present study investigates this issue in Arabic L2 empirically.

This study addresses whether diacritics assist Arabic L2 learners in terms of word recognition and whether diacritics affect L2 learner's reading speed, accuracy, and comprehension at different stages of Arabic L2 acquisition.

This study takes into account several factors. First, it examines the role of diacritics in word recognition by focusing on the role of internal diacritics to the exclusion of using diacritics in case endings *ʔiʕrāb*. This is because case endings deal with word final diacritics, which are related to Arabic syntactic rules. Second, to ensure a thorough investigation, this study considers the textbooks used to be the main source of input for the Arabic L2 learners who participated in this study. Third, this study examined

the role of diacritics in word recognition by Arabic L2 learners at different stages of acquisition (beginning, intermediate, and advanced). Fourth the study investigates the reading performance of two groups of Arabic L2 learners: a) those who were exposed to instructional materials containing diacritics and (b) those who were exposed to instructional materials not containing diacritics. This study contributes to the literature by elucidating this issue from angle of the role of diacritics in word recognition and their impact on Arabic L2 learners' reading performance with implications for Arabic language teaching, curriculums, and textbooks used in the Arabic L2 classroom. The study includes the following research questions:

RQ 1. Do diacritics play a role in the word recognition of isolated words for learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of Arabic L2 acquisition?

RQ 2. Do diacritics play a role in reading speed for learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of Arabic L2 acquisition?

RQ 3. Do diacritics play a role in reading accuracy for learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of Arabic L2 acquisition?

RQ 4. Do diacritics play a role in reading comprehension for learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of Arabic L2 acquisition?

1.5 Outline of the Dissertation

The dissertation is organized as follows: The present chapter, i.e. Chapter 1, provides an overview of the research questions and a brief summary of the dissertation. Chapter 2 contains a brief overview of the Arabic language, a historical review of diacritics in the Arabic language, Arabic orthography and word recognition, using diacritics in Arabic curriculums, the role of diacritics in word recognition and the reading process (including studies on Arabic as an L1), the role of diacritics in word recognition and the reading process (including studies from other languages, such as Hebrew and Persian, which have writing systems similar to Arabic), and the role of diacritics in word recognition and the reading process (including studies on Arabic as an L2). Chapter 3 provides a detailed explanation of the study instruments including: the participants and the selection process, materials used in designing the tasks of this research, the research tasks, and the methods of designing them. The chapter also presents the data collection procedures and methods used to analyze the data. Chapter 4 reports the findings and analysis of each task. Chapter 5 discusses the findings and how relate to the previous studies. The chapter also presents the research limitations, implications, and recommendations for future research.

Chapter 2

Literature Review

2.1 Overview

A small number of studies examined the role of diacritics in word recognition and reading regarding Arabic as an L1. Fewer studies even examined the role of diacritics in Arabic as an L2. This scarcity of studies is due to a lack of research on Arabic word recognition in general. this is likely because most language theories focus on Western languages, which rely on a different orthography system than Arabic. (Frost 2006; Share 2008) This study attempts to investigate the role of diacritics in word recognition in Arabic as an L2 by L2 learners.

Before reviewing relevant studies, however, it is important to examine the history of Arabic script to understand the significant role perceived by Arabic native speakers and grammarians for diacritics as far back as the seventh and eighth century. Moreover, it is worthwhile to offer a brief account of the treatment of diacritics in the curriculums of Arabic as an L1 in Arabic-speaking countries. It is equally important to review previous studies that attempted to examine the role of diacritic, in languages that share similar features with Arabic script, such as Hebrew and Persian

This chapter begins with a brief background of the Arabic language and its sounds and script features. Next, it offers a historical review of diacritics' stages of development in Arabic as they relate to the orthographic depth hypothesis. Then, it offers a brief account of use of diacritics in the curriculums of Arabic as an L1. Finally, the chapter reviews existing studies according to three strands: studies on Arabic as an L1, studies on languages similar to Arabic, and studies on Arabic as an L2.

2.2 Arabic Language Background

Arabic is the mother tongue of approximately 467 million people around the word, and it is the official language in 27 countries located in the Arabian Peninsula, North Africa, and many parts of the Middle East (Ahmad, 2018). Also, Arabic is the language of the Qur'an, the holy book of Islam, and it is considered the religious language of about 1.6 billion Muslims around the world (Roudi, May, & Lynch, 2013). Arabic has a variety of spoken dialects, which are referred to as "colloquial Arabic" a blanket term used to refer to the entire range of dialects used in the Arab world (Haddad & Roitfarb, 2014). Arabic has a variety of spoken dialects, which are referred to as "colloquial Arabic," a blanket term used to refer to the entire range of dialects used in the Arab world (Haddad & Roitfarb, 2014). Modern Standard Arabic (MSA), the modern formal and written standard across the Arab world, is a modified extension of Classical Arabic. Since MSA is the official language of Arab League countries, it is "used in newspapers, magazines, textbooks, academic books, novels, short stories, and other 'serious' writing. It is used orally in some university contexts, in political and other 'read' speeches, and in the

delivery of the news on radio and television" (Parkinson, 1991, p. 32). Therefore, it is "more or less the same throughout the Arab World with minor variations mainly in lexical choice and phonological features due to the influence of the local diallects" (Albirini, 2016, p. 10).

Regarding the way MSA is produced, Alhawary (2011) indicates that there are two styles of MSA, formal and informal. He clarified formal MSA as consisting of:

> … the production of grammatical and vowel (as a part of the spelling and pronunciation) endings of words in a sentence, except for the last word in the sentence, which should be in pause form… [it] means providing the full form of each word with its ending, whether the ending is grammatical or has to do with its fixed spelling at the end of the word (p. 23).

As for informal MSA, it is "marked by the production of words in the sentence in pause form. This means that all grammatical endings are dropped (i.e., not produced altogether)" (Alhawary, 2011 p. 23).

In terms of phonology, Arabic has a phonetic alphabet that contains 26 consonants and three long vowels: ا [aa]– و [uu]– ي [ii], with their corresponding short vowels *fatħah* ﹷ [a], *dˤammah* ﹹ [u], and *kasrah* ﹻ[i]. However, "only long vowels are included in the alphabet and the representation of the short vowels is left out … Long vowels are twice as long as short vowels. Thus, if we assume the short vowel to equal one beat, the long vowel equals two beats of its corresponding short vowel" (Alhawary, 2011, p. 6).

Regarding Arabic script, Arabic is written from right to left in cursive with all letters of the alphabet. Some letters in Arabic script have the same shapes and "are distinguished only on the basis of the existence, location, and number of dots" (Evitar & Ibrahim, 2014, p. 175), such as ب [b], ت [t], ث [θ]. Most letters take a different shape based on their position in the word (initial, middle, or end). For example, the shape of ح [ħāʔ] at the beginning of a word is حـ (such as in حب *ħub/ ħab/ ħib* "love/seeds/ dearest") while in the middle of a word, it is ـحـ (such as in سحب *saħaba/soħob..* "pulled/clouds..."). At the end of a word, it has two different shapes ح (such as in مرح *maraħ* "fun"), and ـح (such as in ملح *milħ* "salt"). The majority of Arabic script's letters are connected to neighboring letters from both sides, except for six letters which only connect from the right side (ا [ʔalif] ـا, د [dāl] ـد, ذ [ðāl] ـذ, ر [rāʔ] ـر, ز [zāy] ـز, و [wāw] ـو), and cannot be connected to letters that follow them to their left (such as ز , ر , and و , as in, for example, موز *mawz* "banana" and مريض *marīdˤ* "sick"). Arabic script can be written with diacritics (exhibiting shallow orthography), such as ذَهَبَ *ðahaba* "went", or without diacritics (exhibiting deep orthography), such a ذهب *ðahaba/ ðahab "went/ gold"*. Arabic written with diacritics is most often used for the reading of important texts, such as the Qur'an, Hadith texts of the Prophet Muhammad, and Arabic literature, to avoid mistakes in pronunciation and comprehension. However, Arabic script has passed through many stages of development the most recent of which stemmed from the need to ensure the correct reading and comprehension of primarily the Qur'an. The stages of development related to diacritics are discussed in detail below.

2.3   A Historical Review of Diacritics

The Arabic language is associated with the sacred book of Muslims, the Qur'an. In their early years (610-632 CE), early Muslims were native Arabic speakers. They listened to and memorized the Qur'an rather than read it. (Alhalabi, 1993). During the early period of Islam, the way the verses of the Qur'an were transmitted depended on listening to reciters who had memorized the Qur'an and recited the verses aloud. When copies of the Qur'an were written during the rule of the Third Rightly-Guided Caliph Uthmān Ibn Affān (579–656 CE) , they included no dots or diacritics. Uthmān Ibn Affān sent these copies to the Islamic states then with reciters who read and taught the Qur'an to the people living there (Alhassan, 2003). However, all of these states were Arabs; the people already had competence in Arabic, which assisted them in reading and accurately understanding the Qur'an.

Soon after the Islamic empire spread and many non-native Arabic speaking people converted to Islam, mistakes in pronunciation and comprehension increased, and reading the Qur'an became difficult for some. As it was not permitted to distort the sacred text and the verses of the Qur'an must be clear and legible for all Muslims, it became necessary to find a way to make the reading of the Qur'an clear and easy for both native and non-native Arabic speakers and to avoid *laħn,* "error" (Mahmoud, 1997). This prompted Arab scholars and linguists to improve the system of writing Arabic by adding dots and diacritics to assist readers and eliminate any ambiguity (Ismaeel, 2001). This development of the Arabic writing system proceeded in through three stages, as follows:

naqtˤ ʔal-ʔiʕrāb "dots of grammatical endings," *naqtˤ ʔal-ʔiʕdʒām* "dots of letters", and *ħarakāt ʔaʃʃakl* "diacritics".

2.3.1   *Naqtˤ ʔal-ʔiʕrāb* "Doting the Grammatical Endings"

The problem of increased *laħn* "error" in reading sacred texts prompted the Arab linguist Abu Al-Aswad Al-Du'alī (603-689 CE) to devise a way to help readers avoid common errors that related to *ʔiʕrāb,* the final grammatical endings of each word. He appointed one scribe in whose intellect he trusted to assist him. As he read the Qur'an aloud, Al-Du'alī asked the scribe to observe the movement of his lips closely and to make specific notations in red ink. He said that if he kept his lips open while articulating the sound, the scribe should put one dot above the letter (if the consonant is followed by *fatħah* –[a]). If he rounded his lips while articulating the sound, the scribe should put one dot within the letter (if the consonant is followed by *dˤammah* – [u]). If he spread his lips laterally, the scribe should put one dot below the letter (if the consonant is followed by *kasrah* – [i]). If he followed any of these movements with a nunation, then the scribe should put two dots instead of one (Alhamad, 1982; Framawi, 1978; Ismaeel, 2001; Jum'ah, 1967; Seray, 2004; Sharshal, 2000). Al-Du'alī and his scribe followed this manner of working until all verses of the Qur'an were carefully re-written.

This approach based on dots was used to develop a script for short vowels corresponding to the long vowels (‬ا [ā], و [ū], ي [ī]) (Bateson, 1967; Mahmud, 1979). It is worth noting that the names of the diacritics used today derive from the movement of Al-Du'alī's lips: *fatħah*, derived from opening the lips; *dˤammah*, derived from rounding

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the lips; and *kasrah*, derived from spreading the lips laterally. Moreover, this approach

linked the sounds of letters with the movement of the lips, which is why they are called,

in Arabic, *ħarakāt* "movements", referring to dots in this early stage and diacritics (short

vowels) in the following stages (Alhassan, 2003).

By adding this system to the Arabic script of the Qur'an, Al-Du'alī contributed a

solution to the *ʔiʕrāb* challenge, word endings that indicate grammatical case (e.g.,

nominative, accusative, or genitive). However, other challenges in Arabic script remained

after this stage of development that still posed a dilemma for readers, especially non-

native Arabic speaking people readers. One problem is the similar shape of some Arabic

consonants, which were written in the old script without dots—even though they

represent different phonemes, such as ح [ħāʔ], خ [xāʔ], ج[dʒīm]). In addition, other

letters were written using the same shape in the middle of the word, such as ـيـ[yāʔ] and

ـنـ [nūn], which, when written in the middle of a word, have the same shape without dots

(see Appendix 1). This issue continues to cause ambiguity when trying to distinguish

letters in Arabic script. Because of the enduring nature of this difficulty with letter

distinction, there was a need to develop another way to make Arabic script easier to read,

especially for non-native Arabic speakers who encountered difficulties with these similar

consonants.

2.3.2   *Naqtˤ ʔal-ʔiʕdʒām* **"Doting the Letters"**

Naqtˤ ʔal-ʔiʕrāb "dots of grammatical endings", created by Abu Al-Aswad Al-Du'alī

(603-689 CE) proved to be inadequate in making Arabic script legible for non-native

Arabic speakers; this was because it related only to *ʔiʕrāb* "case markers". The system required additional development, especially to deal with the similar shapes of some letters that commonly caused distortions of pronunciation when reading Arabic script aloud (see Appendix 2). Thus, two of Abu Al-Aswad Al-Du'alī's students, Naṣr Ibn Āṣim (D. 708 CE) and Yaḥyā Ibn Yaʿmur (D. 709 CE), continued their teacher's work to improve Arabic script. Their system differed from Al-Du'alī's system; it focused on distinguishing between letters that had similar shapes in written form (Zaydan, 1983). They also used a different color of ink to add dots that distinguished between similar letters by considering the following criteria:

1) The shape of the dots was similar to that used in the first stage of development by Abu Al-Aswad Al-Du'alī.
2) To distinguish between their system and their teacher's system, Āṣim and Yaʿmur used black ink rather than red.
3) The maximum number of dots per letter did not exceed three (Framawi, 1978; Alhassan, 2003).

Thus, the systems of Al-Du'alī (*naqtˤ ʔal-ʔiʕrāb*) and Āṣim and Yaʿmur (*naqtˤ ʔal-ʔiʕdʒām*) worked together in Arabic script to accomplish two main functions. They defined the correct case marker for each word (*naqtˤ ʔal-ʔiʕrāb*) by adding red dots and distinguished between similar letters with black dots (*naqtˤ ʔal-ʔiʕdʒām*) (see Appendix 3).

Later students of Naṣr Ibn Āṣim and Yaḥya Ibn Yaʿmur further improved upon Al-Du'alī's first stage of development (*naqtˤ ʔal-ʔiʕrāb*) by using different colors to add more dots to indicate additional sounds, such as strong and light, *hamza* "glottal stop", *sukūn* "silence", *madd* "elongation", and *šaddah* "gemination" (Alhassan, 2003; Framawi, 1978). However, because this system depended on colored dots to represent the actual sounds of the letters in each word as well as case markers and letter distinctions, Arabic script became burdensome for the writer, who had to use sometimes more than three colors for each word (Appendix 3). The system also created a burden for the reader, who had to distinguish between these dots. To alleviate these burdens, another linguist, Al-Khalīl Ibn Ahmad Al-Farāhīdī (719 – 786 CE), added more steps (Alhassan, 2003).

2.3.3 *ḥarakāt ʔaʃ-ʃakl* "Diacritics"

Due to the crowding of dots that came to characterize Arabic script, reading the script became confusing for readers trying to distinguish between the different functions of dots. For writers, obtaining the required ink colors was also a challenge. Thus, there was a need to develop a new method of a script writing that retained the benefits of the different functions of dots but avoided the confusion caused by a large number of dots on each page of script (see Appendix 4).

Consequently, Al-Farāhīdī created a new system and solved this issue. His system retained the dots of *ʔal-ʔiʕdʒām* and converted the dots of *ʔal-ʔiʕrāb* to small shapes (diacritics) that served the same functions as the dots in Al-Du'alī's system. This enabled Al-Farāhīdī to write all words, dots, and diacritics with only black ink (Nasif, 1973).

Hence, this new system retained all the benefits of the old systems while avoiding their drawbacks. It facilitated reading by helping readers distinguish between the functions of different elements of Arabic script—without the confusion caused by similar shapes, dots, and the sheer volume of different colors on each page. Al-Farāhīdī's new system can be presented as follows.

Table 2.1 Al-Farāhīdī's diacritic system

Name	Sound	Placement	Symbol
fatħah	[a]	Above the letter	◌َ
dˤammah	[u]	Above the letter	◌ُ
kasrah*	[i]	Below the letter	◌ِ
Strong sukūn- šaddah	Consonant doubled	Above the letter	◌ّ
Light Sukūn	Silence	Above the letter	◌ْ
hamzah	Phonemic glottal stop	Above and below the letter	ء
ʔalif ʔal-waṣˤl**	Non-phonemic glottal stop	Above the letter	◌ٱ
madd	Lengthening *of* the long vowels	Above the letter	◌ٓ

*Later changed to ◌ِ
**Only used in the Qur'an

In this system, Al-Farāhīdī created new diacritics to represent the functions of dots in the old system in addition to designating new functions. For example, in the old system, only four functions dealt exclusively with case markers (i.e., grammatical functions), while the new system had ten functions that dealt not only with case endings but also with the internal vowels of a word (Alhassan, 2003). This final stage of development bears strong similarity to what is used in Arabic script today, with a small change in the shape of *kasrah*, which became ‒‒instead of ى‒‒and a small change in the shape of *madd*, which became ˜‒‒instead of ˝‒‒. It also added *tanwīn* "nunation"

ˀ‒‒, ˀ‒‒and ˀ‒‒, which are the three grammatical endings [an], [un], and [in], respectively occurring in word final position (Alhawary, 2011). Finally, other diacritics were added to the *šaddah* as follows: ˀ‒‒, ˀ‒‒, and ˀ‒‒.

By examining all of these stages of Arabic script writing's development, it can be concluded that each linguist aimed to develop tools to remove ambiguity and assist with reading Arabic text. The result of including diacritics in Arabic text is that it changed the nature of the text from deep to shallow orthography (Hnasen, 2008; Seraye, 2004), which is discussed in detail in the next section.

2.4   Deep and Shallow Orthography

The writing systems of languages have several differences in terms of matching between orthography and phonology (Feldman & Turvey, 1983; Frost, 2005; Frost, Katz, & Bentin, 1987; Frost, Katz, & Bentin, 1992). Some languages have simple systems with direct correspondence between graphemes and phonemes. For example, Serbo-Croatian

has a simple system in which each letter represents only one phoneme (Hansen, 2008). In contrast, other languages have systems that are "rather complex because of the phonological differences between words with similar letter constellations (e.g., heal - health) and similar pronunciation for words with different letter constellations (e.g., peel-deal)" in English (Hansen, 2008, p. 22).

Many studies on different languages link differences in the reading process with the orthographic depth hypothesis (ODH) (Feldman & Turvey, 1983; Frost et al., 1987; Katz & Frost, 1992). This hypothesis divides alphabetic orthography into shallow orthographies and deep orthographies. On the one hand, shallow orthography reflects the consistent and straightforward one-to-one correspondence between a grapheme and phoneme (Hansen, 2008). Because it contains all of the phonetic information, shallow orthography supports effortless word recognition and reading. Reading shallow orthography depends upon phonological decoding, which facilitates the reading process. On the other hand, "deep orthographies encourage a reader to process printed words by referring to their morphology via the printed word's visual orthographic structure" (Katz & Frost, 1992, p. 71). Thus, readers encounter difficulties in connecting between letters and their sounds, and rely heavily on other components, despite the phonological features of orthography (Hansen, 2008).

According to Taha (2016), attention to the topic of orthographic features and their impact on the reading process and visual word recognition has increased in the past two decades (see Frost, 2005; Seymour, Aro, & Erskine, 2003; Simon, Bernard, Lalonde, & Rebaï, 2006; Taha et al., 2013; Ziegler et al., 2010). Moreover, many studies were

conducted to examine the effect of the depth of orthography on the reading process in different languages (Bruck, Genesee, & Caravolas, 1997; Frith, Wimmer, & Landerl, 1998; Goswami, Gombert, & de Barrera, 1998; Goswami, Porpodas, & Wheelwright, 1997; Goswami, Ziegler, Dalton, & Schneider, 2001; Landerl, Wimmer, & Frith, 1997; Seymour, Aro, & Erskine, 2003; Wimmer & Goswami, 1994). For example, Frith, Wimmer, and Landerl (1998) suggested that:

> … low orthographic consistency, as in English, necessitates the use of complex and error-prone strategies in phonological recoding, whereas high consistency, as in German, allows phonological recoding into syllables on-line. This makes the teaching of phonological recoding relatively straightforward and allows the acquisition of necessary reading skills to proceed at a faster pace. Differences in the teaching of reading might, in turn, contribute to differences in recoding skills (p. 32).

Furthermore, Seymour, Aro, and Erskine (2003) compared "English with a wider range of European languages and also [sought] to determine the stage in reading acquisition at which the orthographic depth effect becomes evident" (p. 144). They found that readers of transparent European languages achieved fluency in reading earlier than did their counterparts in English, which reflects the deep orthography of written English.

Goswami, Gombert, and de Barrera (1998) conducted a study to compare the effects of orthography on children learning to read English, French, or Spanish. They

concluded that the most efficient reading strategy for children learning to read a transparent orthography is the reliance on letter-by-letter decoding, like in Spanish. This strategy depends on the consistency of grapheme-phoneme relatives and leads to consistent accuracy in reading. In contrast, children who learned less transparent orthographies, such as English and French, encountered more difficulties in reading because they learned more ambiguous orthographic-phonological relatives. Thus, their accuracy when reading nonsense words and unfamiliar words decreased.

The Arabic language orthography can be shallow or deep. Removing diacritics results in Arabic orthography changing from shallow to deep orthography (without diacritics). Deep orthography reflects the morphology of the language more than the phonology or the transparent, shallow orthography (with diacritics) (Abu-Rabia, 1999; Perfetti, Goldman, & Hogaboam, 1979). Therefore, the use of diacritics (shallow orthography) might affect the process of word recognition and comprehension for those reading Arabic texts. This issue is discussed in detail in the next section.

2.5   Diacritics and Arabic Word Recognition

One of the most critical elements in determining the pronunciation and meaning of an Arabic word (other than context) is diacritics. These include the internal short vowels and other phonetic information, such as consonant doubling and lengthening, which can be represented by diacritics (but not by letters). One important role of these diacritics is removing any ambiguity from the word, as can be seen in the Figure 2.1:

Figure 2.1 Unambiguous shallow orthography
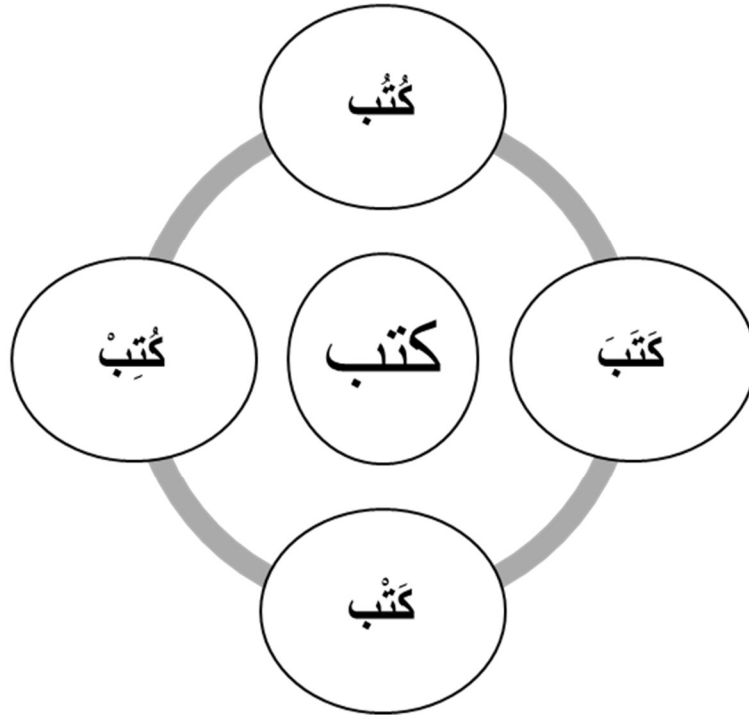
Upon examining the words in Figure 2.1, it can be noted that they have the same shape and, thus, must be read and understood mainly through context to achieve the correct pronunciation and meaning, if the diacritics were to be removed from them. With diacritics, however, the pronunciation and meaning of each word can be easily determined, and word recognition becomes easier. Examples (1)-(2) illustrate how diacritics disambiguate meaning and clarify the pronunciation of a given word.

(1)

Without Diacritics	Meaning	Pronunciation
كتب	Ambiguous*	Ambiguous*
كتب	Ambiguous*	Ambiguous*
كتب	Ambiguous*	Ambiguous*
كتب	Ambiguous*	Ambiguous*

*Ambiguous = several possible meanings

(2)

With Diacritics	Pronunciation	Meaning
كَتَبَ	kataba	"wrote"
كُتُب	kutub	"books"
كُتِبْ	kutiba	"was written"
كَتْب	katb	"combining"

It can be seen that adding diacritics results in Arabic orthography changing from deep orthography (without diacritics), reflecting the morphology of the language more than the phonology, to a transparent or shallow orthography (with diacritics), reflecting the surface phonology of the language (Abu-Rabia, 1999; Perfetti, Goldman, & Hogaboam,

1979). Based on examples (1)-(2), the use of diacritics affects the process of word recognition and comprehension for those reading Arabic texts.

As noted earlier, old Arabic script presented difficulty related to ambiguity at the levels of individual letters and words. It lacked clarity for Arab readers especially for non-native Arabic speaking people readers. Enhancements were needed to remove ambiguity and facilitate reading. The critical historical development of Arabic script changed it from deep orthography to shallow orthography by adding diacritics to each word.

2.6   Diacritics in the Curriculums of Arabic Samples from Arabic-Speaking Countries

An important factor that might affect the role of diacritics in Arabic is the input—namely, how learners learn Arabic words in texts especially at the early stage of their learning. Hence, before starting to review the previous studies (keeping in mind that most studies were conducted on Arabic as an L1), it is worthwhile to review methods of teaching and learning Arabic words and texts in Arabic-speaking countries. Text samples using diacritics in the curriculums of Arabic as an L1 were taken from three countries represent different Arabic regions: Saudi Arabic from the Arabian Peninsula, Syria from the Middle East, and Morocco form the North Africa. The review is focused on three educational level: elementary, middle, and secondary school.

Saudi Arabia's 1-12 education system is divided into three stages: elementary school, middle school, and secondary school. In Arabic language curriculums at the

elementary level, words and texts are fully vowelized. In the elementary level, this system is not only used in Arabic language curriculums but also in other courses. In these curriculums, diacritics are not only used in original texts but also in the remaining components of textbooks, including the introduction, instructions, questions, and practice drills (see Appendixes 5-6). At the middle school level, diacritics are also applied to words and texts in Arabic language curriculums. However, the number of diacritics is lower than in elementary school; not every single letter has a diacritic. The system of adding diacritics to words and texts at this stage depends on vowelized case endings and letters in the word that assist in removing ambiguity and distinguishing similarities— especially with homographic words. Furthermore, at this stage, rare words (words not frequently used in Arabic) are fully vowelized. In the secondary school, the use of diacritics in Arabic language curriculums decreases. The curriculums use a partially vowelized system that only focuses on some case endings and some syllables in the word that assist in removing ambiguity and distinguishing similarities in some Arabic words— especially in homographic words (see Appendix 7). Moreover, at the secondary school level, diacritics are used heavily in the Arabic language grammar curriculum. For example, in the grammar of passive words, diacritics play a significant role in distinguishing the words used to derive the structure. For example, for يَكْتُبُ *yaktubu* "he is writing", which is a verb in the active voice; the diacritics of the first and pre-final letter are changed, as in يُكْتَبُ *yuktabu*. "is written" Therefore, using diacritics here is a crucial element for describing grammar (see Appendix 8).

In addition, it is important to mention that all the verses of the Qur'an and Hadith texts of the Prophet Mohammad are always written with diacritics in all. This is done because mistakes are not allowed when reading sacred texts.

In Syria, the 1-12 education system is also divided into three main stages: elementary school, preparatory/middle school, and secondary school. Syrian Arabic language and non-language curriculums for Arabic as an L1 use diacritics to teach Arabic at all stages of education. There is an intense use of diacritics in elementary schools, where the fully vowelized system is used for all words, texts, instructions, and practice drills (see Appendix 9). At the preparatory/middle level, diacritics are still used in the Arabic language curriculums but with less intensity. Usually, diacritics are used for the important syllables of words, playing a significant role in determining the correct pronunciation and meaning. In addition, these diacritics are used to clarify the case endings (see Appendix 10). Similarly, the same method is used in the upper-secondary level, but with more emphasis on curriculums that use original texts from ancient to modern writers, such as Arabic literature (see Appendixes 11-12).

Finally, in Morocco, the 1-12 education system is also divided into three main stages: primary school, lower-middle school, and secondary school. Diacritics are used in Arabic language curriculums throughout education, which does not differ from what is done in Syria and Saudi Arabia. In primary school, the use of diacritics is most intense. The use of diacritics also exists in lower-middle school, and secondary school where diacritics are used more with the sacred texts and literature (such as fiction, poetry, and essays) (see Appendixes 13-15).

In addition, it is important to mention that all the verses of the Qur'an and Hadith texts of the Prophet Mohammad in curriculums of these countries are always written with diacritics. This is done because mistakes are not allowed when reading sacred texts.

In summary, it is clear that, in these three countries, using diacritics is an important component for curriculums that teach the Arabic language to native speakers. The method for using diacritics with words and texts depends on three factors: the learners' level, the text genre, and the reasons for using diacritics. Regarding the learners' level, diacritics are used throughout education, ranging from fully vowelized in the earlier stages of learning to partly vowelized at the higher levels of learning. As for text genre, sacred texts always appear in a fully vowelized form, and Arabic literature often appears with vowelization. Other texts at higher levels of learning are somewhat vowelized to assist in identifying case endings, removing ambiguity. Finally, in terms of the reason for using diacritics, in some instances diacritics are used to explain and facilitate Arabic grammar for learners (e.g., the passive voice example mentioned previously) and in identifying case endings, removing ambiguity. Therefore, it can be seen that diacritics are presented in the textbooks and curriculums of Arabic language for native learners in different Arabic countries.

2.7 Previous Studies Related to the Role of Arabic Diacritics

Most studies of word recognition and reading comprehension in Arabic were conducted on Arabic as an L1 (Abu-Hamour, Al-Hmouz, & Kenana, 2013; Abu-Rabia, 1996, 1997, 1998, 1999, 2001, 2007; Abu-Rabia & Siegel, 1995; Ibrahim, 2013; Maroun & Hanley,

2017; Seraye, 2004; Taha, 2016; Taha & Azaizah 2017). However, a few studies have addressed word recognition and reading comprehension in Arabic as an L2 (Hansen, 2010; Khaldieh, 1996, 2001; Showalter & Hayes-Harb, 2015); only two of these studies deal partly with the effect of diacritics (Hansen, 2010; Khaldieh, 2001).

2.7.1 Studies in Arabic as an L1

The most important studies related to the effect of diacritics (especially short vowels) on word recognition and reading among native speakers of Arabic were conducted by Abu-Rabia (1995, 1996, 1997, 1998, 1999, 2001, 2007). These studies investigated the impact of vowelization on word recognition and reading processes among low- and high-skilled readers, either as an individual factor or in combination with other variables, such as context, text type, and reader type. Similarly, the reading of vowelized and un-vowelized isolated words and sentences was tested by Abu-Rabia and Siegel (1995) to determine differences in vowelized and un-vowelized isolated words between low- and high-skilled readers. The findings indicated that both levels of readers made fewer errors in isolated vowelized words compared to un-vowelized isolated words. However, no statistically significant differences were found between low- and high-skilled readers in reading unvowelized isolated words. Additionally, participants at both skill levels improved their reading accuracy when reading words in context (i.e., in sentences). Thus, "the nature of Arabic language is homographic (if not vowelized), and without the posting of short vowels on words the language becomes deep orthographic instead of shallow, as is the case when short vowels are posted" (Abu-Rabia, 1999, p. 95).

When vowels and context are combined, reading becomes optimal. To support this claim, Abu-Rabia (1996) investigated the role of vowels and context in reading accuracy in Arabic among highly skilled Arabic readers to determine whether context and vowels facilitate reading. Participants were asked to read four types of texts: a fully vowelized paragraph, an un-vowelized paragraph, a vowelized word list, and a list of un-vowelized words. The findings revealed that when words were fully vowelized and in context, readers made fewer errors; however, when words were un-vowelized and isolated, the number of errors was highest (Figure 2.2). Abu-Rabia (1997) found the same result when examining the influence of Arabic vowels on the reading accuracy of low-skilled and skilled native Arabic speakers reading narrative stories and newspaper articles that provided both vowelized and un-vowelized text. Additionally, participants were asked to read both vowelized and un-vowelized words, which revealed that both skilled and unskilled readers performed better with vowelized texts and word lists. Overall, these findings emphasize the positive role vowels play on words in context or in isolation, when facilitating word recognition in both low- and high-skilled readers of Arabic (see Figures 2.3 and 2.4 illustrating the findings of the participants' reading accuracy in Arabic narrative stories, and their reading accuracy in Arabic newspaper articles under vowelized and un-vowelized conditions).

Figure 2.2 Reading accuracy under four reading conditions (number of errors)
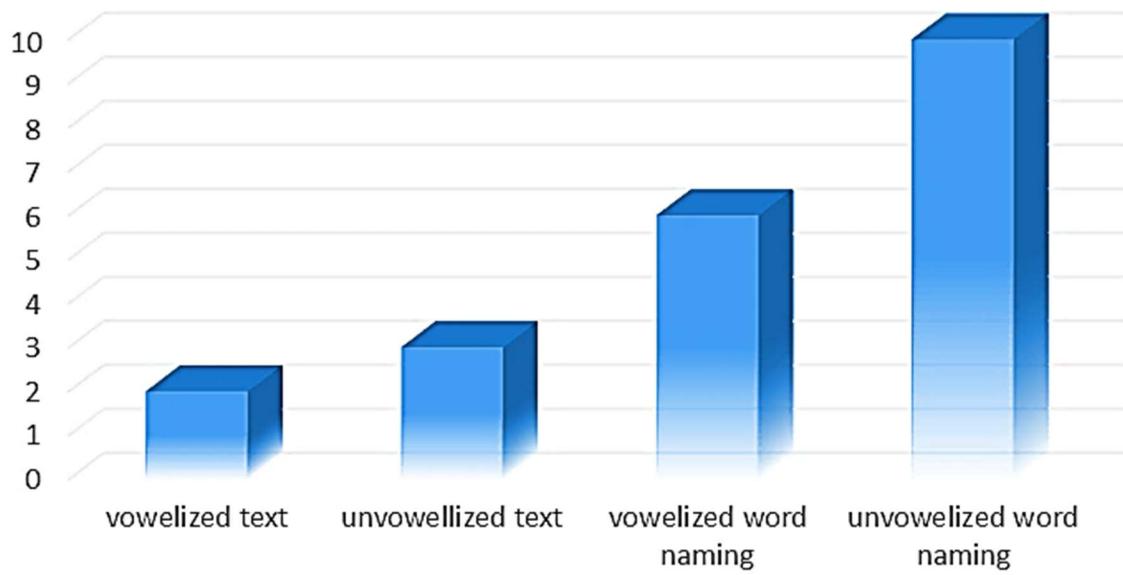
Figure 2.3 Reading accuracy in Arabic narrative stories
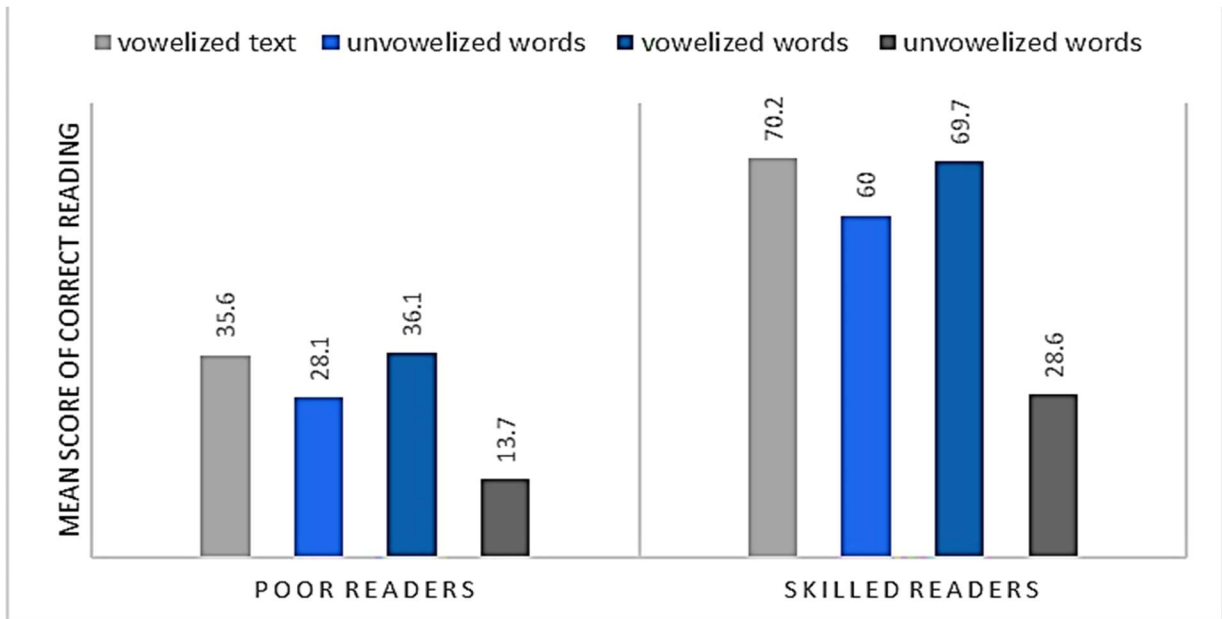
Figure 2.4 Poor and skilled readers' accuracy scores in Arabic newspaper articles
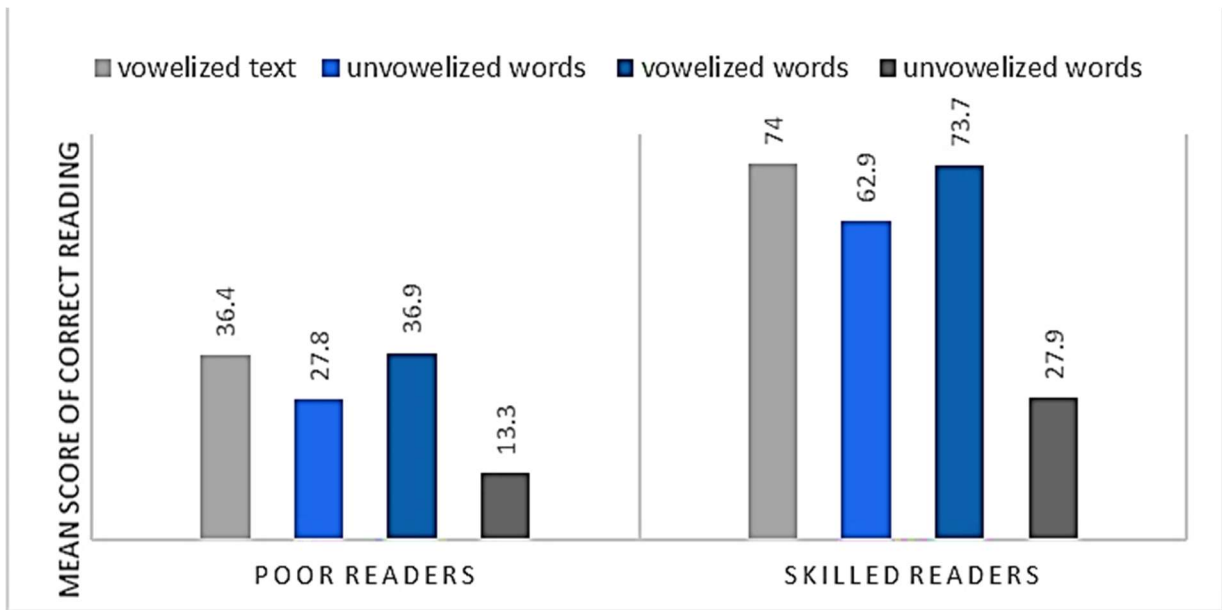
Further investigating the effects of vowels and context on reading accuracy among low-skilled and native Arabic readers, Abu-Rabia (1997) divided stimuli into three types (i.e., paragraphs, sentences, and words) and reading in each style into three conditions (i.e., fully vowelized, partially vowelized, and unvowelized texts). The results confirmed that both levels of readers improved in accuracy when reading vowelized paragraphs, vowelized sentences, and vowelized isolated words. This supports that vowelization is a significant variable facilitating reading for native Arabic readers (see Figures 2.5, 2.6, and 2.7 illustrating the participants' reading accuracy in Arabic paragraphs, reading accuracy in Arabic sentences, and reading accuracy in Arabic isolated words).

Figure 2.5 Skilled and unskilled readers' accuracy scores (paragraphs)
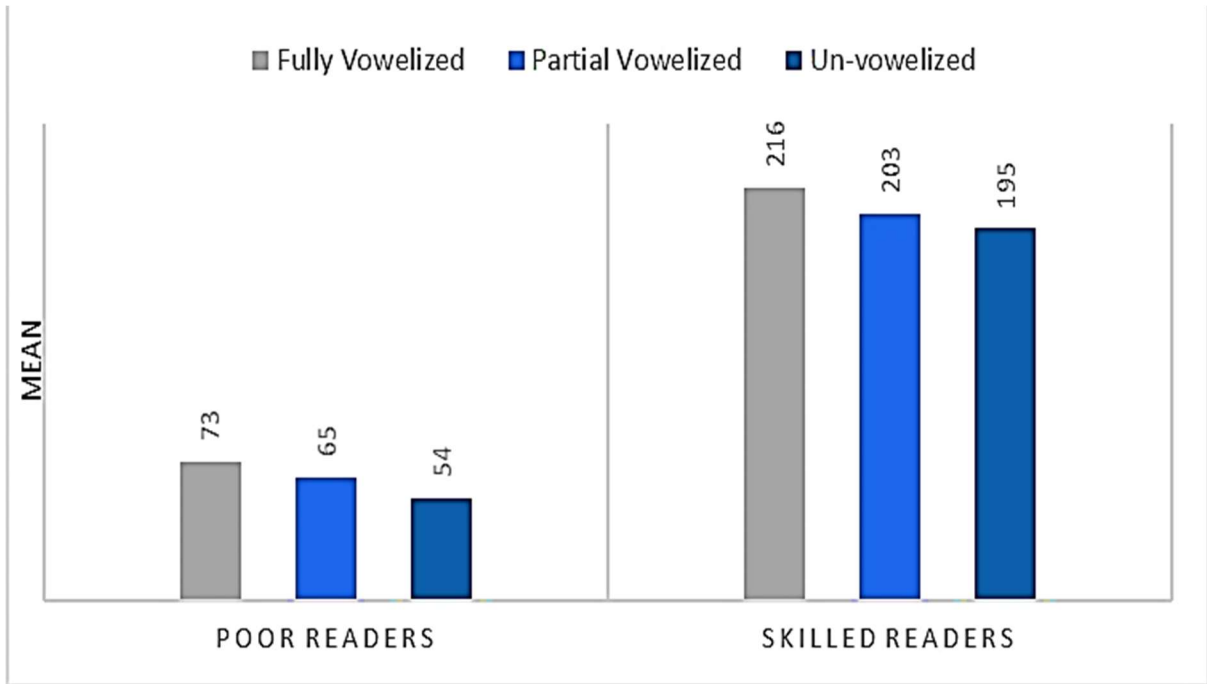
Figure 2.6 Skilled and unskilled readers' accuracy scores (sentences)
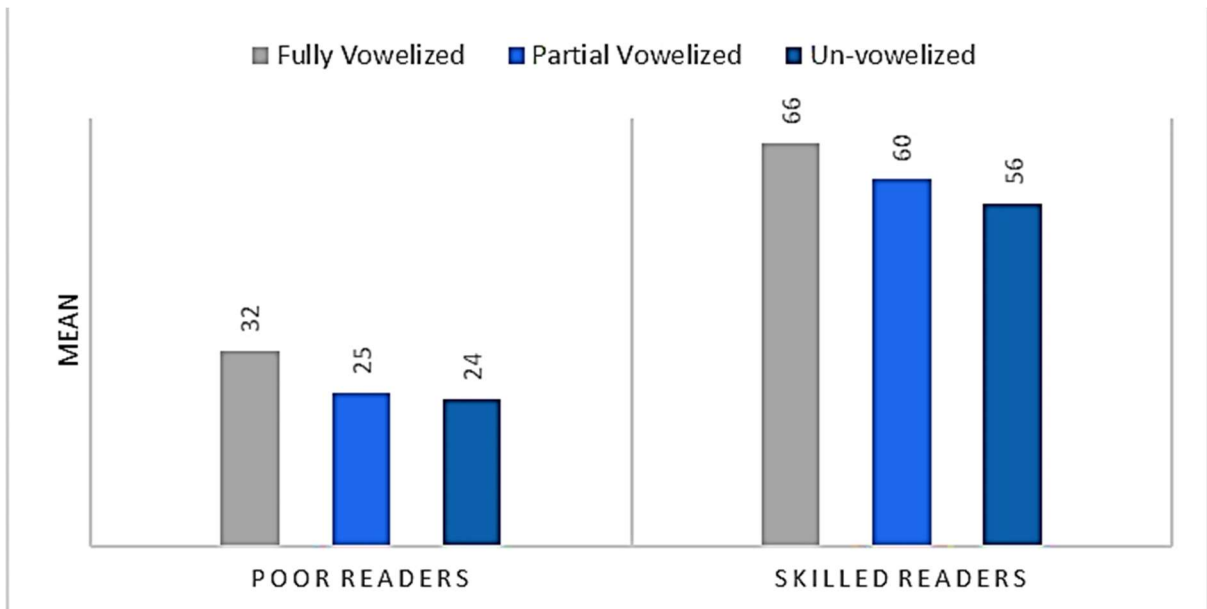
Figure 2.7 Skilled and unskilled readers' accuracy scores (isolated words)
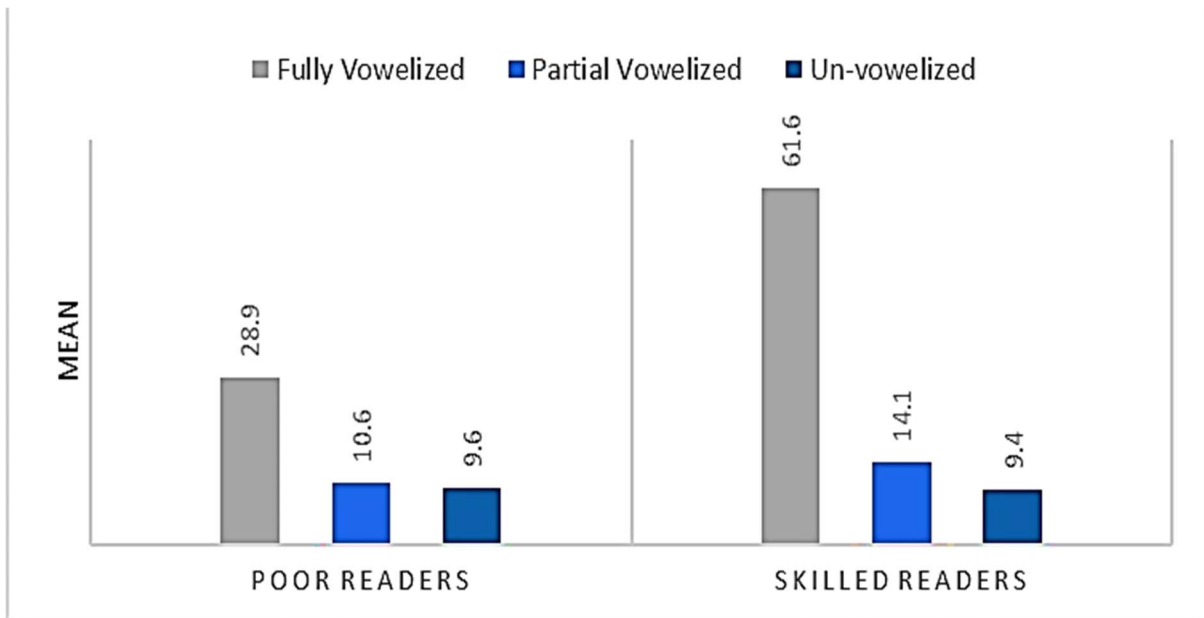
In another study, four text styles (i.e., narrative, informative, poetic, and Qur'anic) were investigated by Abu-Rabia (1998), using three texts of each style to test three reading conditions: correctly vowelized, unvowelized, and incorrectly vowelized. The results showed that reading ability, regardless of skill level, for all reading conditions was significantly and positively influenced by the presence of vowels. Reading difficulty among these four writing styles varied; narrative and informative texts were easier to read than poetic and Qur'anic texts. According to Abu-Rabia (1998)

> [w]hen wrongly vowelized texts of all writing styles were compared with correctly vowelized and un-vowelized texts, vowels had a significant effect. Poor as well as skilled readers did not ignore vowels when they

were wrongly posted on letters, which led to wrong pronunciation. (p.

116)

This finding confirmed reader's primary focus and heavy reliance on diacritics while

reading. Thus, diacritics play a significant role in reading comprehension and affects

word meaning and overall text comprehension. (see Figures 2.8 and 2.9 illustrating

participants' reading Accuracy in Arabic narrative text and the reading accuracy in

Arabic informative text).

Figure 2.8 Skilled and unskilled readers' accuracy scores (narrative text)
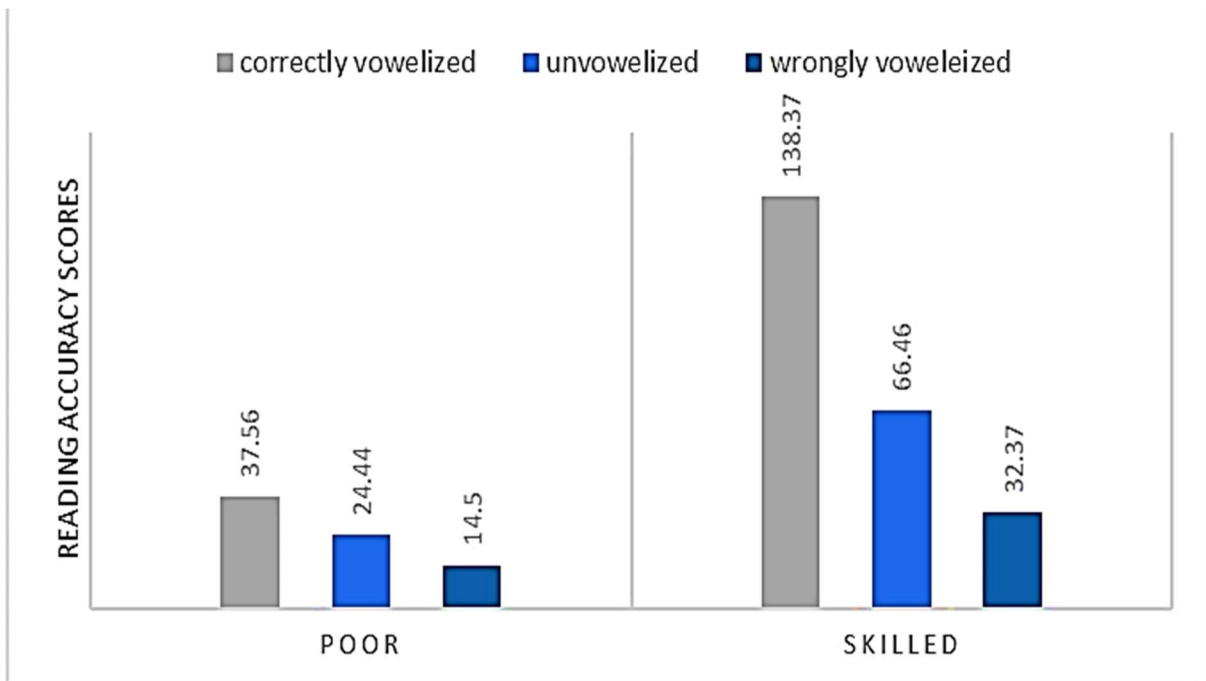
Figure 2.9 Skilled and unskilled readers' accuracy scores (informative text)
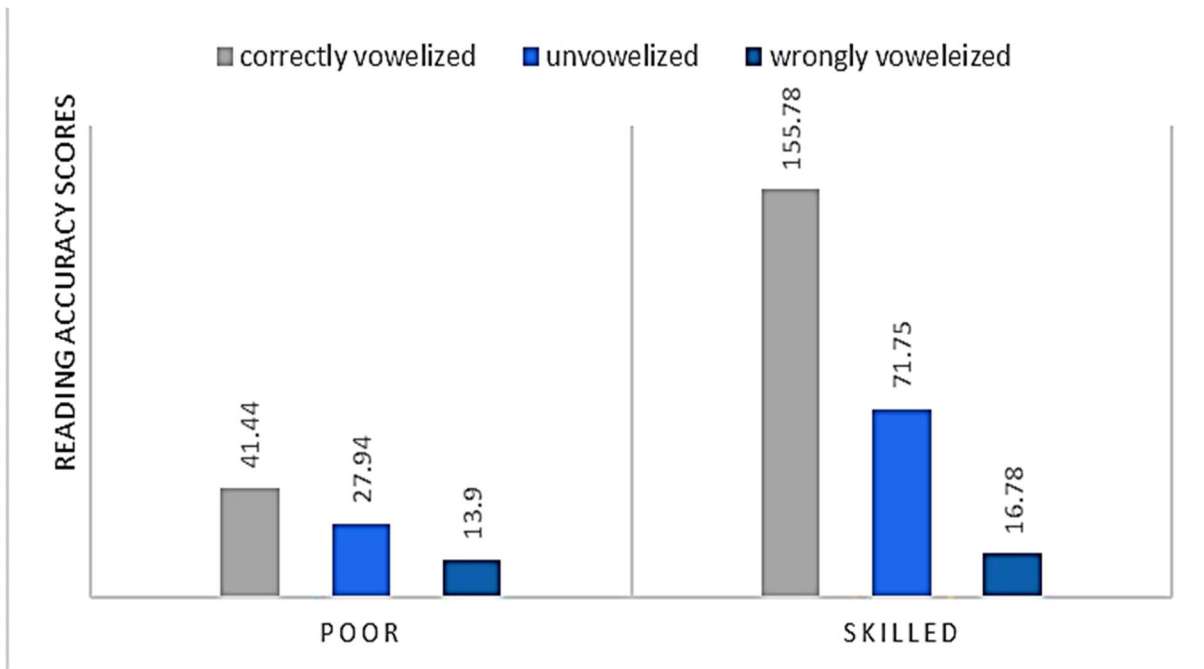
To further determine how diacritics affects reading comprehension, Abu-Rabia (1999) investigated the effects of Arabic vowels on reading comprehension among native Arabic children. Two groups of native Arabic speakers were randomly sampled. The first group contained children aged 12 to 12.5 years and the second group contained children aged 7 to 8 years. Both groups read Arabic texts in two reading conditions: vowelized and unvowelized. Then, multiple-choice comprehension questions about each text were answered to determine how well participants understood the texts. The results showed that vowels were a significant facilitator of reading comprehension in both age groups (see Figures 2.10 and 2.11 illustrating the Arabic reading comprehension among children aged 12–12.5 years, and the Arabic reading comprehension among children aged 7–8 years).

Figure 2.10 Arabic reading comprehension among children aged 12–12.5 years
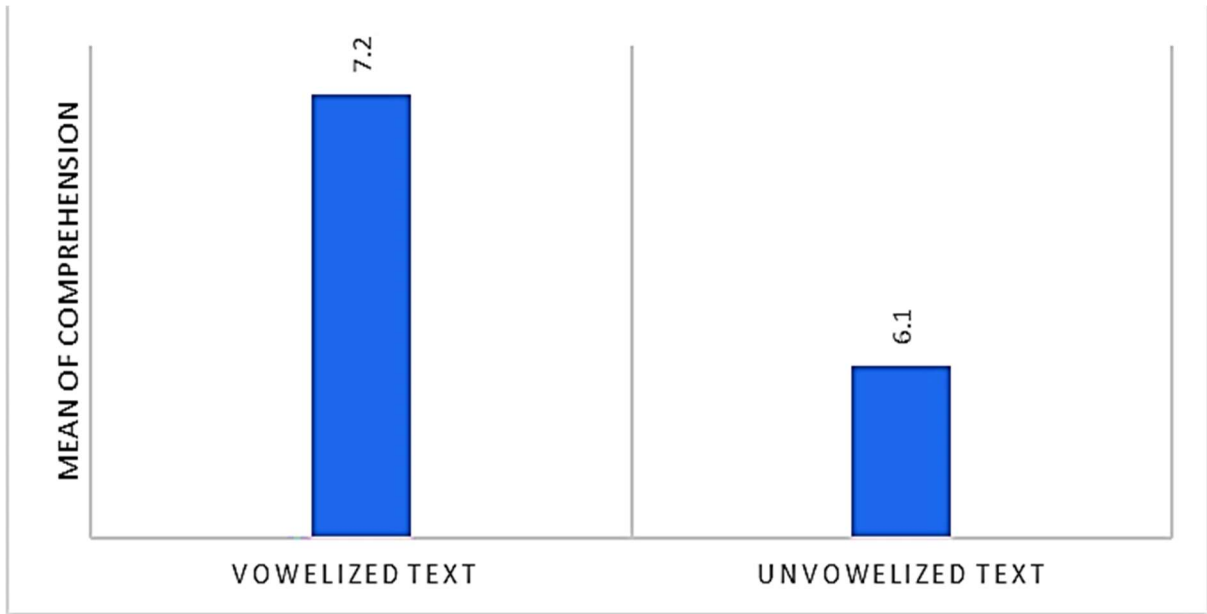
Figure 2.11 Arabic reading comprehension among children aged 7–8 years
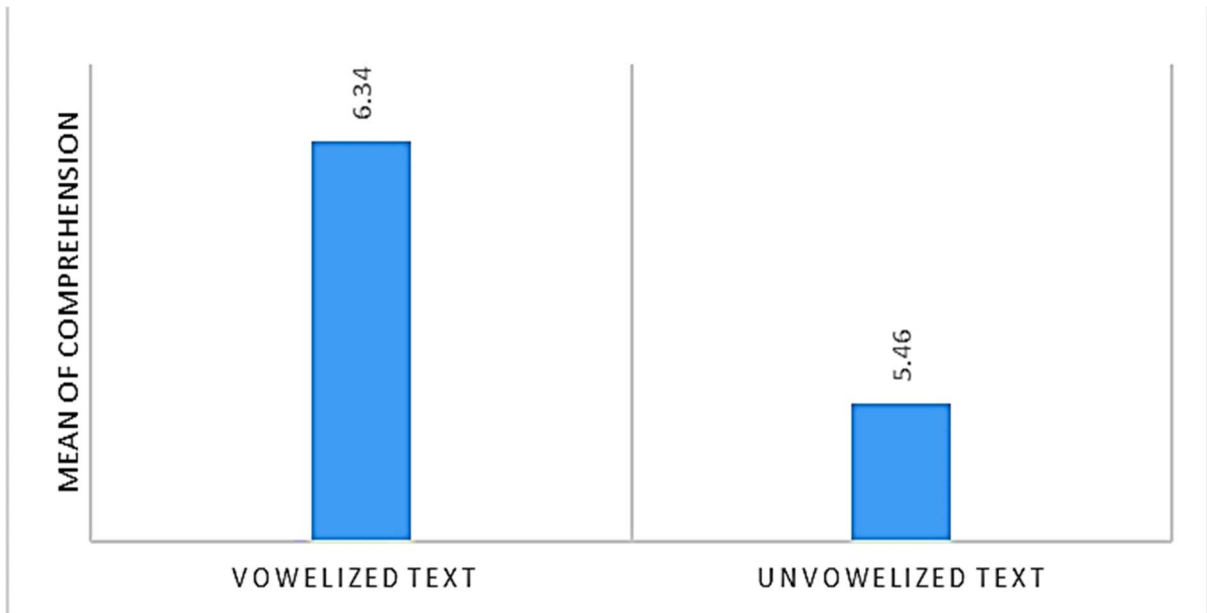
Other researchers have used different measurements of reading accuracy and comprehension to examine the role internal short vowels play in reading fluency and comprehension. Abu-Hamoura, Al-Hmouzb, and Kenanac (2013) investigated the effect of short vowelization on a curriculum-based measurement (CBM) for reading fluency and comprehension in Arabic. A CBM is "considered to be a type of authentic assessment practice that is designed to provide prevention and intervention services to students" (Abu-Hamour et al., 2013, p. 182). The study attempted to measure this effect using two types of measurement: an oral reading fluency CBM, which measures reading fluency based on reading aloud for one minute from a prepared passage (Wright, 2013) and CBM maze, which measures how well students understand text that they read silently (Milone, 2008). The mean age of participants in this study was 10.5 years old, and texts were presented in three reading conditions: fully vowelized, partially vowelized, and unvowelized. The results show that short vowels were a good facilitator of oral-reading fluency and reading comprehension for both skilled and unskilled readers (see Figures 2.12 and 2.13 illustrating the participants' reading fluency and reading comprehension under three reading conditions).

Figure 2.12 Reading fluency of skilled and poor readers
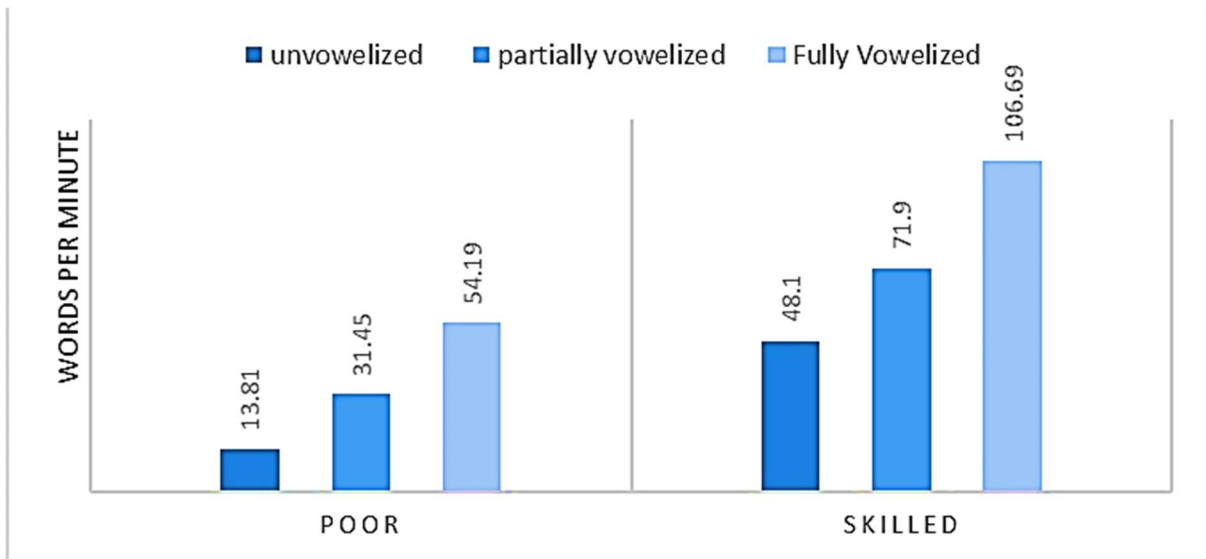
Figure 2.13 Reading comprehension of skilled and poor readers
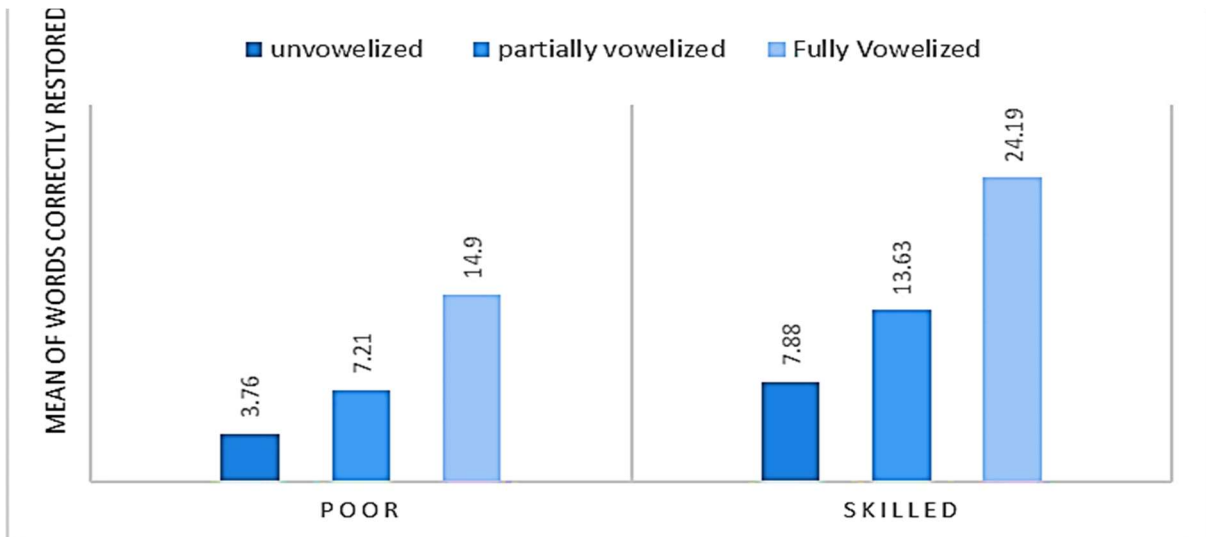
Seraye (2004) investigated the roles of short vowels and context in the process of

reading Arabic among adult native speakers, specifically in terms of reading

comprehension and reading accuracy. Three tasks were used to assess the role of short

vowels at three levels: at the text level, the sentence level, and the word level. The results revealed that only in a word-level task does the absence of short vowels prevent skilled native adult readers from choosing the right form of a word, whereas presence or absence of short vowels and diacritics at the sentence and text levels does not affect the reading process. At the same time, homographic words in texts without vowels took more time to process. Therefore, Seraye (2004) emphasized that text writers should decide which areas of texts might be vowelized to assist readers, and how many short vowels and diacritics are needed for a text representation.

The effects of vowelization on reading Arabic orthography were examined by Ibrahim (2013), who asked child L1 speakers of Arabic to read aloud both vowelized and unvowelized words as well as pseudo-words. Inconsistencies with the findings of several other relevant studies (e.g., Abu-Rabia 1998, 1999; Abu-Hamoura, Al-Hmouzb, and Kenanac 2013) were found. The children read the unvowelized words more accurately than the vowelized words. They also read the unvowelized words more quickly than the vowelized. According to Ibrahim (2013), these inconsistent results "suggested that Arab children used a different perceptual and coding strategy when the stimuli differ in their lexical feature (word vs. pseudo word) and visual/orthographic feature (vowelized vs. unvowelized)" (p. 248).

Taha (2016) obtained similar results in a study of Arabic reading to investigate the impact of vowelization on reading speed and accuracy. Participants were both skilled and unskilled native Arabic readers, among whom un-vowelized words were read more accurately than vowelized words. The skilled readers' accuracy increased when reading

un-vowelized words, and in terms of reading speed, skilled readers read unvowelized words more quickly than vowelized words. Thus, Taha (2016) suggested that vowelization caused a visual load and could be considered redundant information for native speakers.

Taha and Azaizah (2017) used three types of words and pseudo words—full and partial vowelized and unvowelized—to examine the performance of 41 native Arabic readers during a lexical decision task. The results revealed that response time was faster for un-vowelized compared to vowelized words; moreover, lexical decisions for un-vowelized words were more accurate than for vowelized words. The authors argued that "automatic lexical processes during word recognition in Arabic orthography might be disturbed by supplementary information such as vowelization" (p. 521). However, they noted that their study was limited by the absence of unfamiliar words, which could control the lexical status of the presented words because word recognition requires a non-lexical process (Coltheart et al., 1993). As a result of this limitation, they suggested that future studies consider using unfamiliar words and comparing results to those for familiar words to derive a clear understanding of the lexical decision-making process.

Maroun and Hanley (2017) conducted two experiments to investigate whether the presence of diacritics improved the comprehension of all written words or whether the effects are confined to heterophonic homographs. In the first experiment, they asked adult native Arabic readers to decide whether written words had a living meaning, using heterophonic homographs that had one living and one non-living meaning. The results of this experiment showed that diacritics significantly increased the accuracy of the

participants' semantic decisions about ambiguous words. However, no effects were noticed in terms of decisions regarding unambiguous words. The same results were obtained during a follow-up experiment, which relied on sentences rather than single words. Maroun and Hanley (2017) reported that diacritics improved the comprehension of homographs by facilitating access to semantic representations. They noted that their study's participants were native Arabic speakers who attended university education, where most of their reading took place in English and French. The study authors suggested that it would be interesting to conduct the same study with participants who only read Arabic. However, one limitation of this study was that the Arabic proficiency of the participants was not measured when the study was conducted.

2.7.2 Studies of Languages Similar to Arabic (e.g., Hebrew and Persian)

Most previous Arabic L1 studies (Abu-Hamour, Al-Hmouz, & Kenana, 2013; Abu-Rabia, 1996, 1997, 1998, 1999, 2001, 2007; Abu-Rabia & Siegel, 1995) found similar findings to those from studies on Hebrew (Shimron & Sivan, 1994) and Farsi (Baluch, 1992). Shimron and Sivan (1994) examined whether the orthography of bilingual readers in Hebrew and English affected their reading time and comprehension in each language. One such experiment included reading voweled and unvoweled passages, which revealed no significant differences between reading voweled and unvoweled Hebrew texts in terms of reading speed. However, voweled Hebrew texts produced significantly better comprehension compared to unvoweled Hebrew texts (Shimron & Sivan, 1994).

Schiff (2012) examined the speed, accuracy, and reading comprehension of vowelized versus unvowelized texts among participants who were native speakers of Hebrew (i.e., 126 children in the second, fourth, and sixth grades). They were asked to perform three reading tasks related to reading pointed and unpointed words, in addition to taking a comprehension test. An analysis of the mediation effect explored the effects of the children's vowelized reading speed and accuracy on their unvowelized reading speed and comprehension. The results indicated that

> … in second grade, reading accuracy of vowelized words mediated the reading speed and comprehension of unvowelized scripts. In the fourth grade, accuracy in reading both vowelized and unvowelized words mediated the reading speed and comprehension of unvowelized scripts. By sixth grade, accuracy in reading vowelized words offered no mediating effect, either on reading speed or comprehension of unvowelized scripts. (p. 409)

These results support the claim that vowelization serves as the foundation for initial reading ability and assists with successful decoding of non-vowelized scripts.

The vital role that short vowels play in comprehension of Hebrew is similar to their importance in Persian, based on a study by Baluch (1992), who claimed that:

> … the evaluation of evidence of reading opaque (without vowels) and transparent (with vowels) Persian seems to suggest that in addition to this handicap, both beginning and skilled readers may find oral reading of a

word with opaque spelling harder than reading a word with vowels specified

using the lexical channel. (p.102)

The study also revealed that the presence of opaque words could be a nuisance to the

tasks of reading and text comprehension (Baluch, 1992).

2.7.3   Studies in Arabic as an L2

Few studies were conducted about Arabic script and the role of diacritics in word

recognition and the impact of such factors on learning Arabic as an L2. Khaldieh (1996)

examined the roles of Arabic script and phonological encoding in word recognition by

Arabic L2 learners by conducting two experiments: one at the word level and one at the

sentence level. The results showed that Arabic L2 learners have problems with the

phonological and visual system of Arabic, especially with letters that have the same

shapes. However, recognition of words improved with proficiency. Accordingly,

Khaldieh (1996) suggested that with time and practice, learners can develop an awareness

of the phonological and visual Arabic system. Nevertheless, Khaldieh (1996)

acknowledged that his results were restricted to two types of reading (individual words

and sentences only), and a reading task at the text level might yield different results.

Khaldieh (2001) investigated the role that knowledge of *ʔiʕrāb* (i.e., appropriate

short vowels as inflectional endings, including case and mood endings) and vocabulary

play in reading comprehension among American learners of Arabic as an L2. An

expository text was presented to two groups: proficient and less proficient non-native

readers of Arabic. Then, an immediate recall protocol was conducted by participants in

their first language (i.e., English), in addition to completing vocabulary and ʔiʕrāb tasks. Based on the analysis of the data, the participants relied on vocabulary knowledge more than ʔiʕrāb knowledge, which according to Khaldieh (2001), means that ʔiʕrāb does not play an important role in reading comprehension. Therefore, according to Khaldieh, ʔiʕrāb need not be taught at lower levels of language learning and can be delayed until the upper-intermediate level or higher. However, Khaldieh (2001) suggested this issue requires further research using texts such as classical Arabic prose, which would provide more in-depth results about the importance of ʔiʕrāb in reading comprehension according to text type.

Hansen (2010) also examined Arabic L2 learners' word recognition. The effects of internal short vowels on reading speed and reading comprehension were investigated to examine whether missing vowels inhibited reading speed and comprehension and to identify whether learners rely on knowledge of roots and patterns to compensate for lack of internal short vowel information. Surprisingly, the results of this study revealed that vowelization improved neither reading time nor reading comprehension for levels 1 and 2 learners and, in fact, seems to slow reading speed when learners read voweled text in comparison to unvoweled text (see Figures 2.14 and 2.15 illustrating reading time and comprehension under vowelized and un-vowelized conditions). Only when reading voweled text did learners' reading speeds improve significantly from level 2 to 3, while reading unvoweled text stalled progression after level 2. However, Hansen (2010) reported that learners at level 3 and native speakers read the two texts (voweled and

unvoweled) in approximately the same amount of time, which contradicted stalled progression after level 2.

Hansen's (2010) study has many limitations. In terms of reading speed, Hansen examined reading time and whether reading was done silently or aloud. However, Hansen ignored one critical factor; in addition to fluency; accuracy should also be measured because participants may have difficulty comprehending what they read. Additionally, reading aloud provides better information about reading processes using voweled or unvoweled text compared to silent reading. Regarding comprehension, Hansen (2010) used a single five-question multiple-choice task for each text and pointed out that his "test design, which use [d] only five questions in a multiple-choices task, [was] too narrow to allow for statistical measures" (p. 577). Therefore, the recall protocol method related to target words in each text could provide more accurate measurement of participant comprehension.

Figure 2.14 Time spent in reading texts with and without vowelization
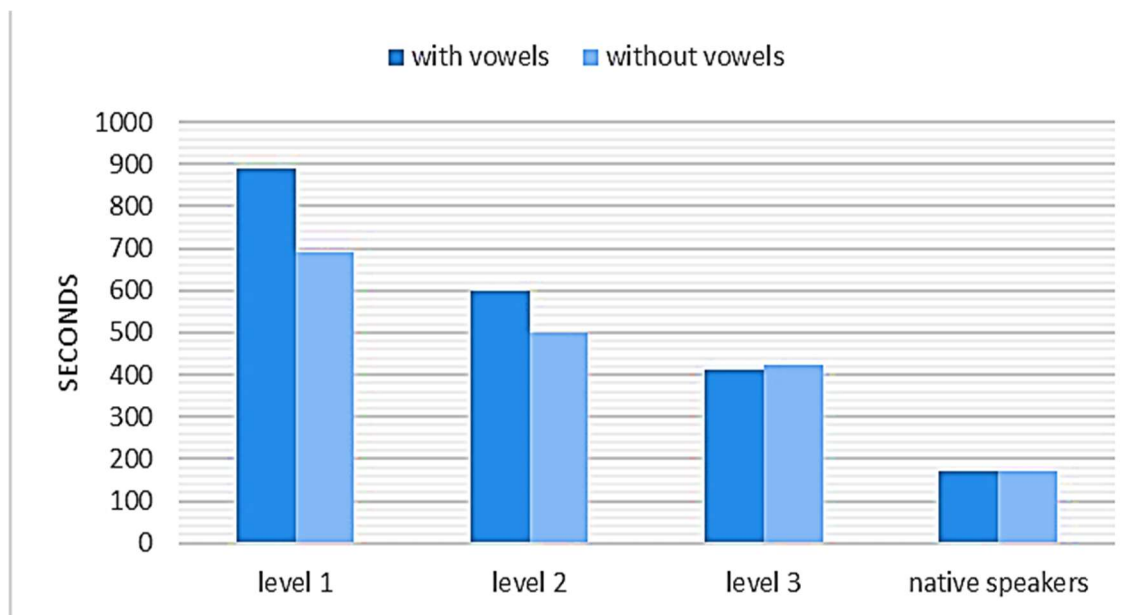
Figure 2.15 Reading comprehension of texts with and without vowelization
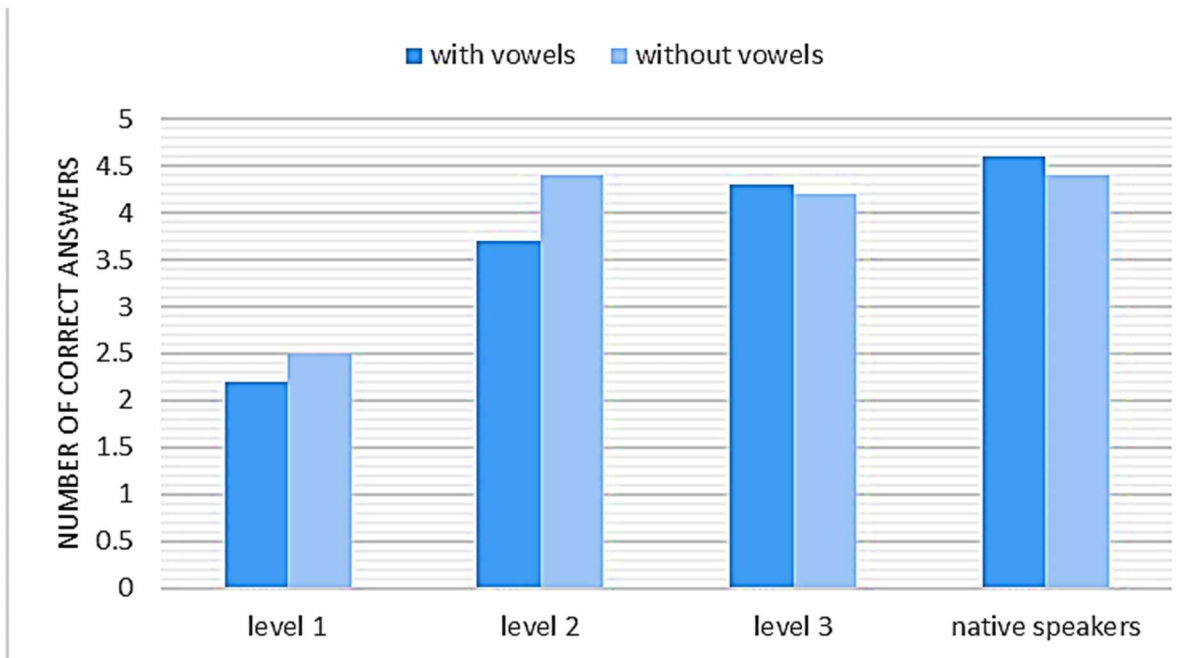
As for other variables that could have affected the result of Hansen's study (2010), these include lack of control for the type of texts the participants were exposed to during formal instruction (i.e., textbook and classroom input). Did they use fully vowelized, partly vowelized, or un-vowelized textbooks? Hansen investigated the effect of vowelization on a set of participants who were enrolled in an MSA intensive communication program, who may have learned Arabic using the same style of a given textbook (i.e., vowelized or unvowelized words and texts). Comparing two sets of participants (i.e., one group who learned from a vowelized textbook and another who learned from an un-vowelized textbook) would have allowed for a more research design (Alhawary, 2018). Finally, Hansen acknowledged that

[I]t might have been because the texts created for this purpose are

rather simple. When readers are proficient, and texts are easy,

readers probably pay less attention to vowels because they rely on

contextual clues. Thus, the added vowel information becomes

redundant (p. 578).

This statement refers to a weakness in the material (task) itself as a possible confounding variable in the study design.

2.8 Summary

This chapter began with a historical review of the development of diacritics in Arabic script. Three main stages were presented and the reasons for each stage, the methods of development, and the problems that the development solved or inadvertently caused were discussed. The primary catalysts for these stages were the need to disambiguate ambiguous words, to create distinctive letter shapes, and to increase reading accuracy and comprehension among both native and non-native readers of Arabic. The resulting development and introduction of diacritics into Arabic script led to the creation of another (shallow orthography) option from the previous single option of deep orthography.

A small number of studies have attempted to investigate the effects of diacritics on Arabic orthography in terms of word recognition and reading performance, most of which were conducted in Arabic as an L1 (Abu-Hamour, Al-Hmouz, & Kenana, 2013; Abu-Rabia, 1996, 1997, 1998, 1999, 2001, 2007; Abu-Rabia & Siegel, 1995; Seraye,

2004; Ibrahim, 2013; Taha, 2016; Tahal & Azaizah, 2017; Maroun & Hanley, 2017).

Very few studies have been conducted on Arabic as an L2 (Hansen, 2010; Khaldieh,

1996, 2001). Most studies of Arabic as an L1 have demonstrated the positive role of

diacritics in word recognition and reading performance. These diacritics serve as a

reading facilitator that improves accuracy and comprehension (Abu-Hamour, Al-Hmouz,

& Kenana, 2013; Abu-Rabia, 1996, 1997, 1998, 1999, 2001, 2007; Abu-Rabia & Siegel,

1995; Seraye, 2004; Maroun & Hanley, 2017) for readers at different proficiency levels.

These findings are similar to those found in studies of Hebrew and Persian as first

languages (Baluch, 1992; Shimron & Sivan, 1994; Schiff, 2012). However, other studies

in Arabic as an L1 suggested that vowelization caused a visual load and could be

considered redundant information for native speakers (Ibrahim 2013, Taha 2016, Taha

&Azizah 2017). Few studies were conducted on Arabic an L2 and these revealed that

diacritics either inflectional endings, or internal short vowels do not play a positive role

in reading performance (Hansen, 2010; Khaldiah 2001). However, many factors could

have affected the results of Khaldiah (2001) and Hansen (2010), and should be

considered and controlled for, such as the type of texts to which instructional materials

participants are exposed during formal instruction (e.g., textbooks or classroom input),

which is controlled for in the present study.

Chapter 3

Methodology

3.1 Overview

The purpose of this study was to examine the role of diacritics in word recognition and their effect on Arabic L2 learners' reading speed, accuracy, and comprehension at different stages of Arabic L2 acquisition. This was done by comparing the performance of two groups of Arabic L2 learners, as follows: a vowelized textbook (VT) group exposed to instructional materials containing diacritics and an un-vowelized textbook (UVT) group exposed to instructional materials that did not contain diacritics. The first task of this study was an isolated word list task, which aimed to measure word recognition as isolated words and identify their effect on the participants' speed and pronunciation in each group under two conditions—vowelized (V) and un-vowelized (UV) words. The second task was the context task, which aimed to measure word recognition in both V and UV texts and identify its effect on the participants' reading comprehension, accuracy, and speed in each group. This study sought to address the following research questions:

RQ 1. Do diacritics play a role in the word recognition of isolated words for learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of Arabic L2 acquisition?

RQ 2. Do diacritics play a role in reading speed for learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of Arabic L2 acquisition?

RQ 3. Do diacritics play a role in reading accuracy for learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of Arabic L2 acquisition?

RQ 4. Do diacritics play a role in reading comprehension for learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of Arabic L2 acquisition?

Due to the nature of this study, which was based on the comparison between two main groups—those who used vowelized textbooks and those who used un-vowelized textbooks—this study required high levels of homogeneity between the two groups to answer the research questions. Therefore, many criteria were considered, starting by selecting the appropriate programs and learners, followed by selecting the appropriate participants according to specific criteria. Then, it was necessary to determine the

appropriate content for use in designing the tasks of this research by considering the suitability and compatibility of input that both groups were exposed to in their respective textbooks, in terms of characteristics such as length and difficulty of texts. All these issues are discussed in the present chapter through a detailed discussion of the participants, materials, data collection procedures, and research design and analysis.

3.2   Participants

Fifty-Four Arabic L2 learners were selected to participate in this study. They represented two different Arabic language programs. The first half of participants comprised the UVT group, which included 27 participants selected from the first program, in which they were exposed to instructional materials not containing diacritics at three proficiency levels (beginner, intermediate, and advanced). Twelve participants in this group were from the beginner, 10 from the intermediate, and 5 from the advanced levels.

The second half of participants represented the (VT) group, comprising 27 participants selected from the second program, in which they were exposed to instructional materials containing diacritics at the same three program levels. As in the UVT group, there were 12 participants in this group from the beginner, 10 from the intermediate, and 5 from the advanced levels.

The UVT and VT groups were selected from two universities in the United States that provide a program in teaching Arabic as An L2. However, to ensure homogeneity

between these two groups to address the study questions, many criteria were applied, as described below.

3.2.1   Criteria for Selecting Programs

3.2.1.1   University Ranks

The Academic Ranking of World Universities (ARWU) was selected for classification in this study, as the criteria used in this ranking consider several indicators of academic performance that offer a general picture about the nature of each university in terms of programs, faculty, students and academic atmosphere. In this ranking, the university scores are weighted based on an institution's quality of education, quality of faculty, and per capita academic performance (ARWU, 2016). Accordingly, the ranks of both universities at the time of conducting this study were in the range of 76–100, which reflects a good homogeneity between the two groups for this standard.

3.2.1.2   Types of Programs

Both the UVT and VT groups' programs were designed to provide students with knowledge of Modern Standard Arabic (MSA) and help them in acquiring the different skills of Arabic language, reading, writing, listening, and speaking. Moreover, each program included three levels of Arabic L2 learning, beginner, intermediate, and advanced, and each level was covered over two semesters (I and II). In this study, semester II was selected as the timeframe for conducting the research, to ensure that the

input at each level would be sufficient for the learners to produce Arabic language skills appropriate to their level.

In semester II of beginner-level instruction, the main objectives in both programs involved learning the four language skills reading, writing, listening, and speaking, with appropriate vocabulary and grammar. Both programs in this proficiency level focused on the simple topics related to personal information and short daily life activities and stories. According to the programs information and descriptions that were collected from each program it can be said that in general both programs shared the main objectives as follows:

In semester II of intermediate-level instruction, both programs shared the same main objectives, namely the development of the learners' MSA reading, writing, listening, and speaking skills and assisting them to develop their comprehension of written and audio texts. Learners at this level can express ideas related to their daily life and family events and engage in short discussions concerning texts on familiar topics in meaningful and well-structured language.

In semester II of advanced-level instruction, the main objective in both programs centered on continuous development of the four language skills, but the programs included attention to more complex structures in terms of grammar, vocabulary, organization, and style. In both programs, learners at this level could read, write, and discuss more complex topics, such as describing places, events, plans, historical facts, arts, and social topics.

The length of the semester in both programs was 16 weeks (4 hours weekly) for each level. The program for semester II in the UVT group started at the beginning of January and ended approximately at the end of April, with one week for midterm break. The program for semester II in the VT group started in mid-January and ended at the beginning of May; it also included one week for midterm break.

The main variable in this study was the textbook used in each program, which represented the main source of learners' Arabic language input during their learning period. Therefore, the textbook used the in the UVT group's program presented the reading texts without diacritics (un-vowelized textbook). The textbook was designed to provide MSA instruction to learners at various levels beginner, intermediate, and advanced. The book presents a list of new words at the beginning of each unit with diacritics, and then the remaining texts, practices, and drills are provided without diacritics. In other words, the diacritics appear only one time, in the lists of new words. The textbook was used in the VT group's program is the vowelized textbook. It was designed to provide learners with MSA language instruction through the same three learning levels beginner, intermediate, and advanced. The textbook presents lists of new words, texts, drills, and practices with diacritics.

3.2.1.3   Types of Learners in Each Program

The learners in each program were learning Arabic as an L2, meaning that Arabic was not their native language. However, some learners were heritage learners, which means that their parents' native language was Arabic. They were excluded from the study due to

the possible effect of exposure to the language from their parents. More inclusion criteria are discussed in the sections immediately below.

3.2.2 Criteria for Selecting Participants

3.2.2.1 Distinguishing the Arabic Language Background

Learners in both programs received a modified copy of the Language History Questionnaire (LHQ), which measures second language learners' linguistic background and illustrates their self-reported proficiency in multiple languages (Li, Zhang, Tsai, & Puls, 2014). This edited questionnaire: (see Appendix 16) covers background information about learners' gender, age, educational background, and Arabic language background. It includes the following questions: Is the learner heritage or foreign? Did the learner learn Arabic before joining this program? What is the textbook that the learner used to learn Arabic during the learning period? Did the learner ever live in an Arabic country for a long time (more than 3 months)? How long has the learner used Arabic in and out of the classroom? How many hours per day does the learner read in the Arabic language? How does the learner assess his/her ability in Arabic in general and Arabic reading specifically? In addition, open-ended questions were included at the end of the LHQ, asking which they feel it is easier to read in Arabic with or without diacritics and why. The questionnaire items offered concise data about the learners, and this assisted in selecting the appropriate participants for this study. Hence, the following types of learners were excluded: heritage learners; learners who enrolled in another program and used the other type of textbook or a mixed textbook before joining their current program; and learners who had lived in Arab countries for a long time (more than 3 months).

Therefore, the previous criteria were used, on the one hand, for the process of selecting the participants, and on the other, to determine the level of homogeneity between the groups at each level of Arabic learning.

3.2.2.2   Determining the Correct Levels of Participants

Due to the nature of this research, it was important to determine the correct proficiency level for each participant from both groups to ensure that the participants represented their levels precisely and each level in each group exhibited homogeneity with the same level in the other group. Consequently, many steps were followed to determine the participants' exact proficiency levels, as described below.

3.2.2.3   Current Level in the Program

Each program had three main levels beginner, intermediate, and advanced; therefore, the first step in determining the potential participants' level was considering their current level in their programs. Nonetheless, the current level was not necessarily a precise characterization of their proficiency; therefore, two more steps were taken to ascertain that all participants in both groups were precisely categorized and ensure that participants' levels at each program were equivalent.

3.2.2.4   Teachers' Assessments of the Learners' Levels

Due to the importance of teachers' assessments, as the teachers work closest with the learners throughout the semester, the teachers were asked to ensure that each potential

participant was at the correct level and deserved to be in this level of the program based on his/her performance during the semester. Thus, those who were deemed by the teachers to be at a lower or higher level based on the teacher's report were excluded.

3.2.2.5   Proficiency Test

In the final step of participant selection, the remaining potential participants completed an Arabic language proficiency placement test used in Arabic Linguistics Institute at King Saud University. Their results were used to ensure that they were at the appropriate level and to compare their proficiency with that of their counterparts in the other program to verify the two groups' homogeneity.

Those who met all the criteria described above in each program were selected to participate in the research experiments, and they were compared with their counterparts in the other program to confirm the homogeneity across the groups. This was done by comparing their Arabic language backgrounds (demographic and self-reported proficiency) and scores on the placement test with their counterparts at the same level in the other group. Based on the previous steps, the demographic information of the selected participants is described below.

3.2.3   Participants Demographic Information

3.2.3.1   Number of Participants

Fifty-four learners were selected to participate in this study. Twenty-four belonged to the beginner level, including 12 from the UVT group and 12 from the VT group. There were

20 participants at the intermediate level, 10 from each group. Finally, there were 10 participants representing the advanced level, with 5 from each group (Figure 3.1).

Figure 3.1 Number of participants in each level
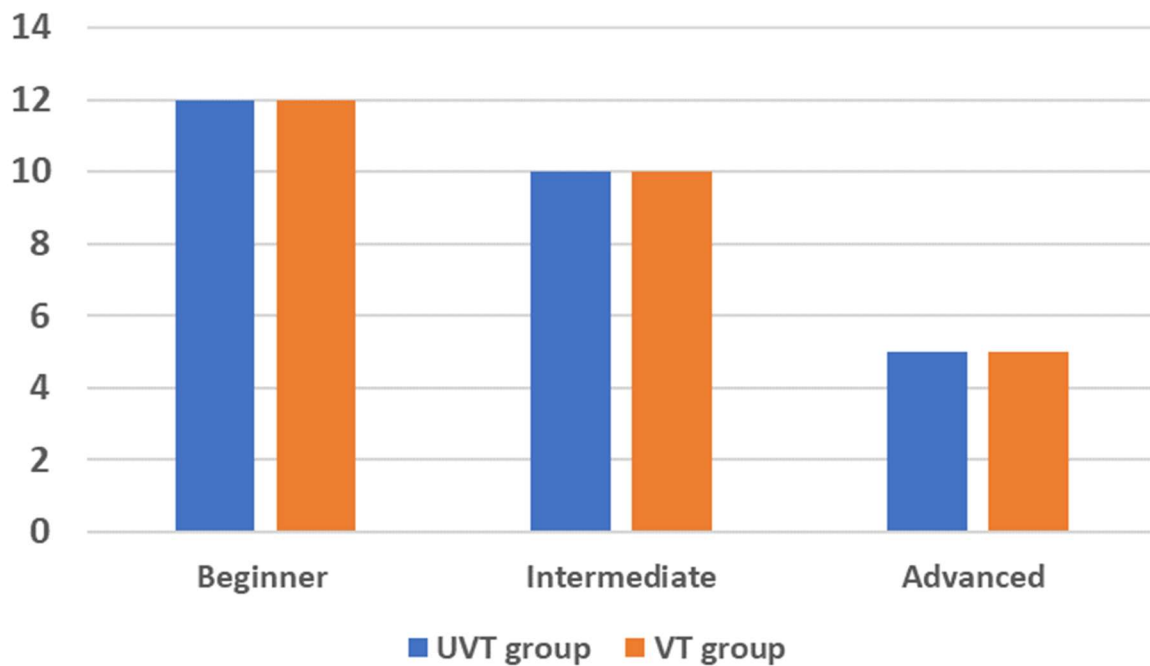
3.2.3.2   Gender

Regarding the participants' gender, 28 females and 26 males were included in the two groups. In the UVT group, there were 13 females, six at the beginner, four at the intermediate, and three at the advanced levels; moreover, there were 14 males, six at the beginner, six at the intermediate, and two at the advanced levels. Correspondingly, in the VT group, there were 15 females, seven at the beginner, seven at the intermediate, and one at the advanced level, while there were 12 males, five at the beginner, three at the intermediate, and four at the advanced levels (Figure 3.2).

Figure 3.2 Gender of participants in each group
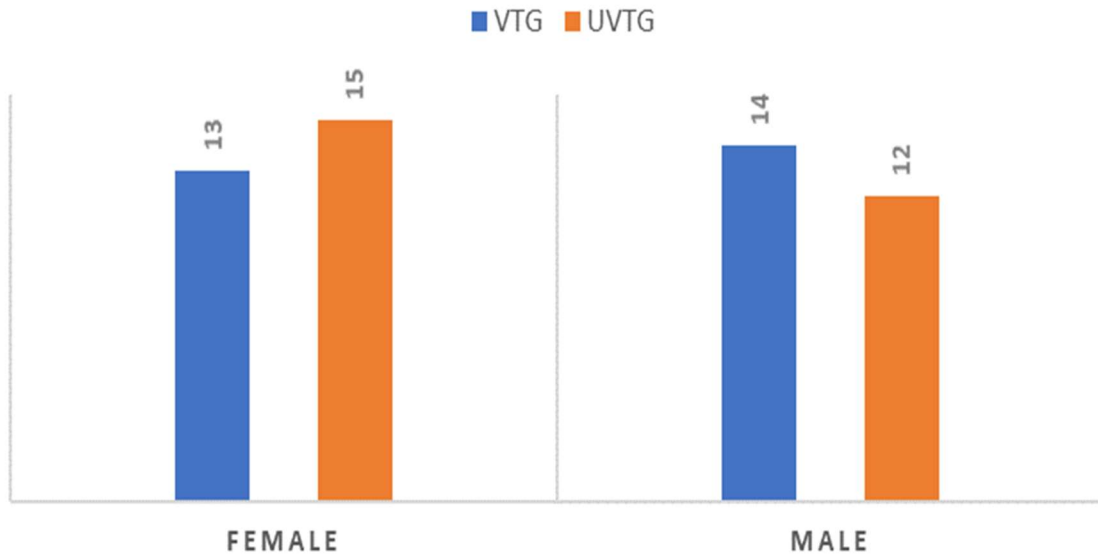
3.2.3.3   Age

Based on the results of the LHQ, the participants' ages in both groups were in the range of 18–27 years. In the UVT group, the range was 18–26 years, and the average was 20.7 years; the age range in the VT group was 18–27 years, and the average was 20.9 years (Figure 3.3).

Figure 0.3 Average of participants ages
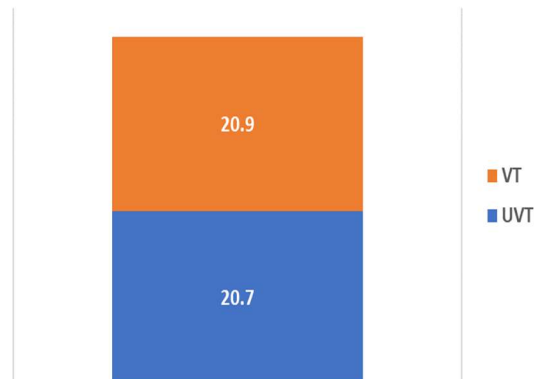
3.2.3.4 Education

Regarding the education level, based on the analysis of the LHQ responses, the participants' educational backgrounds in both programs showed that most participants had bachelor's degrees. Only five participants had master's degrees: three were from the UVT group (one beginner, one intermediate, and one advanced) and two were from the VT group, one beginner and the one intermediate; (Figure 3.4).

Figure 3.4 Education of participants in each group
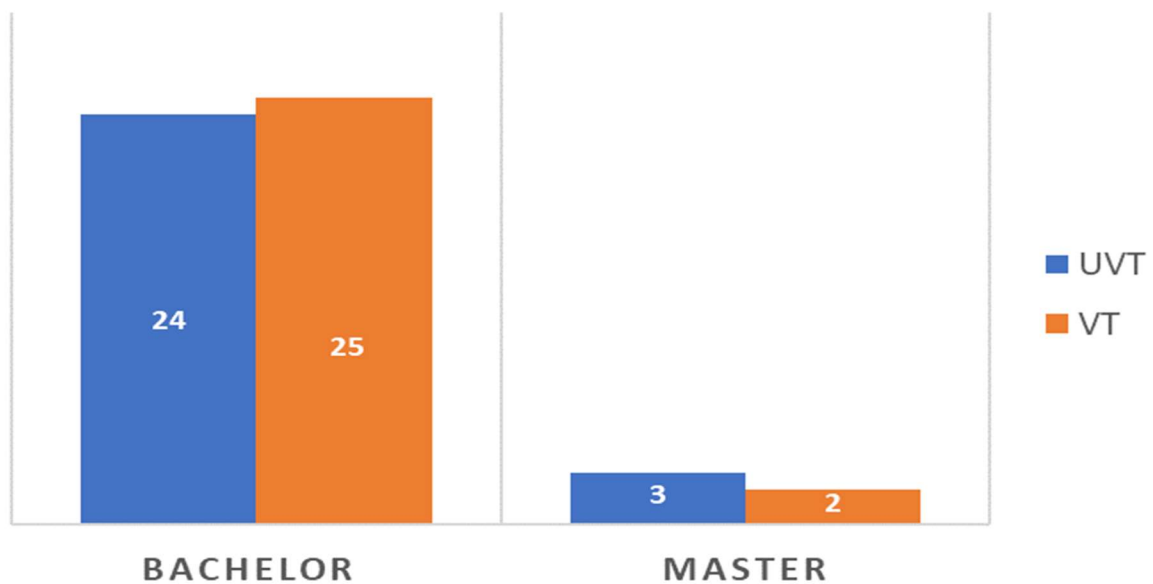
3.2.3.5 Arabic Language Usage

To achieve homogeneity between the UVT and VT groups, additional factors were considered. One such factor was the participants' Arabic language usage in and outside

the classroom. This was considered to generate an idea of the extent to which participants in both groups used and were exposed to Arabic, as well as the extent to which they used resources other than their textbooks, either in or outside the classroom. Hence, the amount of exposure to Arabic inside the classroom was determined by the LHQ and classroom visits, whereas Arabic use outside the classroom was controlled for by many questions included in the LHQ.

Another factor which was considered to achieve homogeneity between the two groups in the two programs was their language use in the classroom. The researcher visited three random classrooms in each group. The classrooms represented the three levels of Arabic language learning beginner, intermediate, and advanced. Based on the outcomes of these visits, it was observed that the use of Arabic differed from one level to another in each group. The teacher of the UVT group at the beginner level used both Arabic and English to explain the meaning of new words and give the students the drill and homework instructions. In addition, the teacher encouraged her students to use Arabic when talking to their classmates. The VT group showed similar use of Arabic in the classroom except when using Arabic to explain the new words. It was noticed that the teacher of VT group used English more than Arabic to present and explain the meaning of new words at the beginner level.

Regarding the intermediate level, use of Arabic in the classroom was more obvious than at the beginner level; Arabic and English were both employed to explain the meaning of new words and give the instructions for drills and assignments. Moreover, both groups' teachers encouraged the students to use Arabic in their conversations with

classmates. However, the teacher in the UVT group gave extra credit for using Arabic in the classroom.

At the advanced level, the teachers in both groups used Arabic in most of their activities inside the classroom. The teachers usually used Arabic to explain the drills and assignment instructions. In addition, the learners in both programs used Arabic in their conversations related to classroom topics; furthermore, they sometimes used Arabic for topics that were not related to the classroom activities. For example, it was observed that the learners in the VT group used Arabic to arrange their next trip after their teacher left the classroom, and one learner in the UVT group at this level asked his classmates in Arabic about assignments in another course.

There were some practices that used resources other than the participants' textbooks in both groups, especially at the intermediate and advanced levels. However, most of these materials were video and audio, while the activities and drills related to reading tended to be taken from their textbooks.

In addition, the LHQ included the following question: How often do you use the Arabic language in the classroom? Based on the participants' answers at the beginner level, the most frequent responses were in the range of "usually" to "regularly" in both groups (Figure 3.5). This indicates that the two groups were almost homogeneous in this way.

Figure 3.5 Using Arabic in classroom: beginner level

■ Never ■ Rarely ■ Sometimes ■ Regularly ■ Often ■ Usually ■ Always

	UVTG	VTG
Always	20.0	20.0
Usually	20.0	20.0
Often	40.0	20.0
Regularly	20.0	40.0
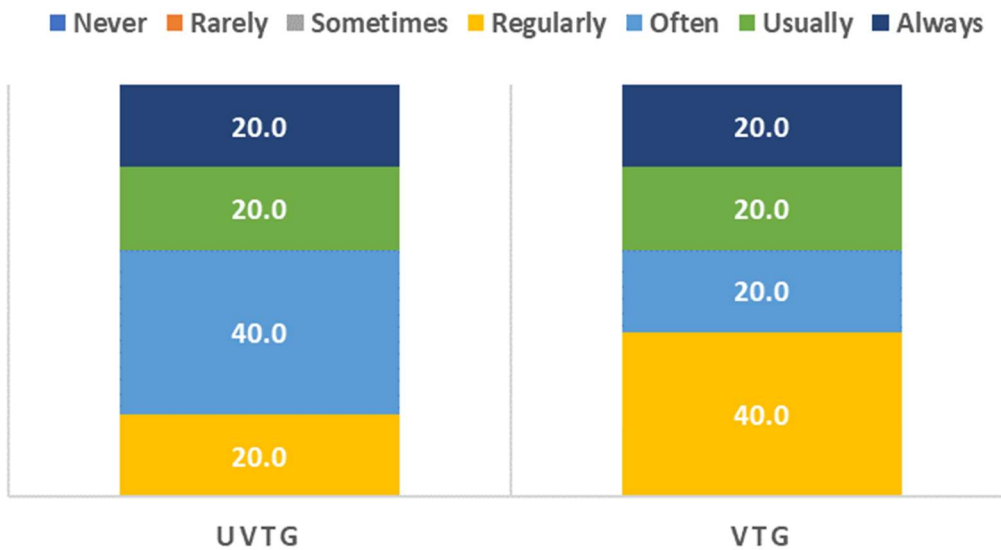
In the intermediate level, the most frequent answers ranged between often and always in both groups UVT and VT, which also indicates that these two groups are almost homogeneous in this level in terms of using Arabic in classroom. Figure (3.6).

Figure 3.6 Using Arabic in classroom: intermediate level

■ Never ■ Rarely ■ Sometimes ■ Regularly ■ Often ■ Usually ■ Always

	UVTG	VTG
Always	30.0	20.0
Usually	10.0	20.0
Often	30.0	30.0
Regularly	10.0	10.0
Sometimes	10.0	10.0
Never / Rarely	10.0	10.0
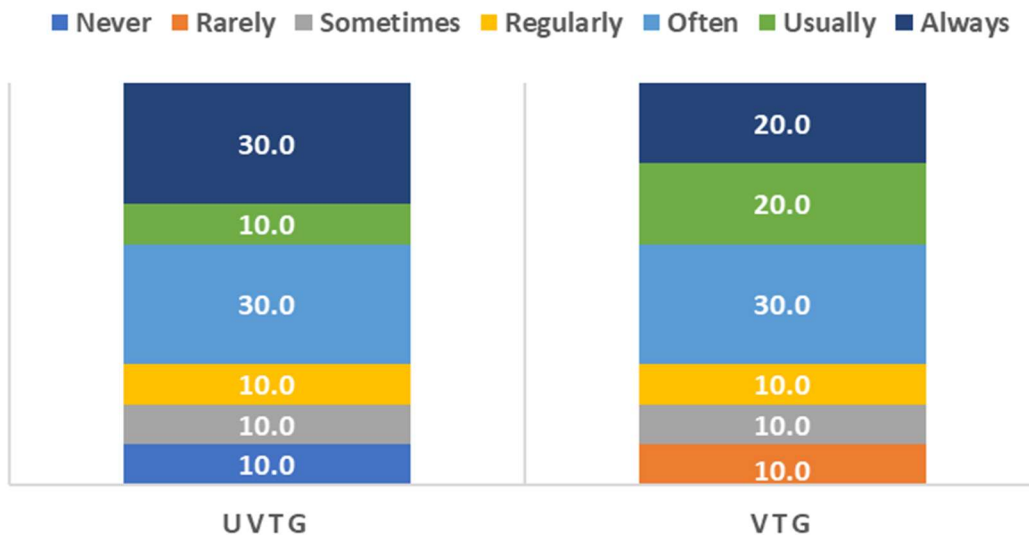
For the advanced level, the analysis of the participants' responses indicated that the most frequent answers ranged from "regularly" to "usually" in both groups. No respondent selected any of the first three categories of use frequency ("never," "rarely," and "sometimes") in either group, which supported the claim that the UVT and VT groups had high homogeneity in terms of using Arabic in the classroom (Figure 3.7).

Figure 3.7 Using Arabic in classroom: advanced level
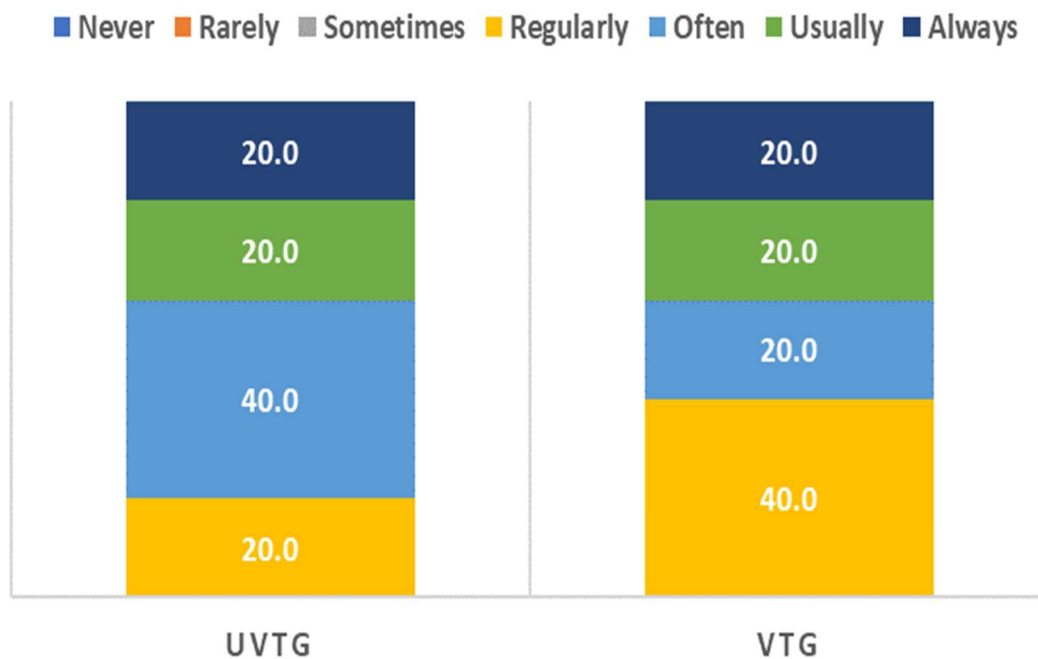
To control for the effect of using Arabic outside the classroom, the LHQ included the following question: How often do you use the Arabic language with people outside the classroom? The participants' responses generally ranged between "never" and "rarely" at all three levels (Figure 3.8). However, to obtain more specific responses, another question was included in the LHQ, as follows: On average, how many hours per day do you spend

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reading in the Arabic language? The responses showed that all the respondents in both

groups spent less than 3 hours reading in Arabic outside the classroom (Figure 3.8).

Based on the analysis of the previous two questions, it can be stated that both groups

were homogeneous in terms of using Arabic outside the classroom.

Figure 3.8 Percentage of using Arabic outside classroom based on LHQ
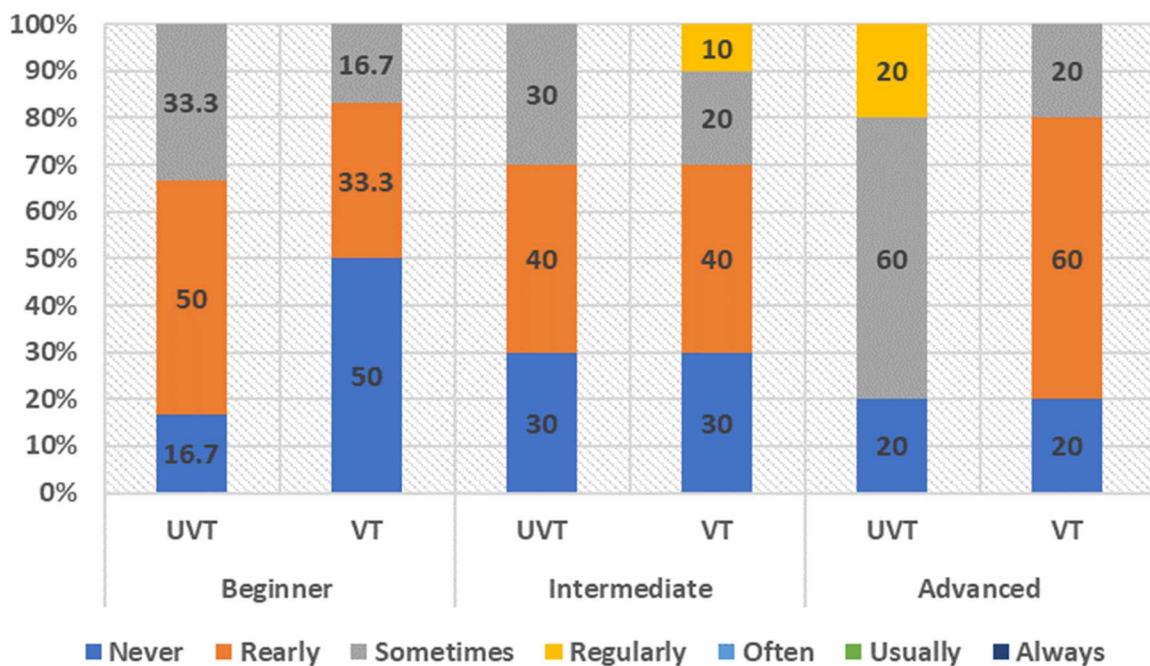
3.2.3.6 Arabic Language Proficiency Test

One of the important instruments used in this study to measure the homogeneity between

the UVT and VT groups at each level was the proficiency Test. The placement test used

at another institution that provides Arabic instruction to foreign learners was used (the

placement test of the Arabic linguistics Institute at King Saud University). The results of

the proficiency test also indicated that there was good homogeneity between the UVT

and VT groups at each level, based on the mean scores. Moreover, it signified that each group had good internal homogeneity, based on the values of the standard deviations for each level in each group. (See Tables 3.1-3.4).

Table 3.1 Average of placement test scores: beginner level

GROUP	N	Mean	Std. Deviation
UVT	12	23.85	5.69
VT	12	24.58	3.34

Table 3.2 Average of placement test scores: intermediate level

GROUP	N	Mean	Std. Deviation
UVT	10	50.88	7.80
VT	10	48.50	6.71

Table 3.3 Average of placement test scores: advanced level

GROUP	N	Mean	Std. Deviation
UVT	5	66.50	9.72
VT	5	67.92	9.01

3.3   Materials

Six lists of isolated Arabic words were designed for this study, two for each level beginner, intermediate, and advanced, with one vowelized and the other un-vowelized. Six texts were also designed, two for each level, with one vowelized and the other un-

vowelized. Before designing the tasks used in this research, the contents were assessed according to multiple standards, as described below.

3.3.1 Lists of Isolated Words

The lists of words served as the experimental materials as isolated words for the first task of word recognition and target words in their contexts for the second task texts. However, to design these lists appropriately, several criteria were applied for each word.

a) Suitability and Familiarity

To neutralize the effect that may have resulted from the words' difficulty levels, all the words were extracted from textbook lessons appropriate for the participants' levels of instruction. However, this raised another potential problem related to the frequencies of words, as it could mean that learners who had been exposed to certain words at a high frequency would recognize them more easily than learners exposed to the words at a low frequency. To avoid this issue, the frequency of each word was considered. Studies of learning vocabulary in a second language have shown different numbers of the minimum level of frequency that a learner of a second language needs to learn a new word. A new word needs to have occurred 6 to 12 times to be acquired (Crothers & Suppes, 1967; Saragi, Nation & Meiester, 1978; Al-Batal, 2006; Ryding, 2013). Based on this, learners at each level had been exposed to each word on the respective list fewer than 12 times to ensure that the effect of high-frequency exposure on word recognition was avoided.

b) Equality of Exposure

Due to the nature of this study, which selected participants from two different programs, it was important for the extracted words to be common to ensure equal exposure between the groups. To achieve this criterion, calculation steps were followed. The main input resource for participants in this study was their textbooks. However, it was difficult to obtain digital copies of the textbooks to facilitate extracting the appropriate words that would fit the research criteria. Therefore, the analysis was conducted by carrying out the steps delineated below.

First, the target weeks of conducting the study were determined at the end of fall semester 2017. The lessons that the learners mastered in those weeks in both the UVT and VT groups were specified by contacting participants' teachers and obtaining the courses syllabus.

Second, the range of lessons was measured by selecting lessons from the lasts weeks in each level for both groups to confirm that the learners had been exposed to the extracted words fewer than 12 times, which assisted in avoiding the effect of a high frequency of exposure on the word-recognition process. To obtain such words, lists of new vocabulary that were given before or after each lesson for each level in both textbooks were inserted in Excel tables. Consequently, six long word columns were generated, two columns for each level, beginner, intermediate, and advanced; the first three columns represented the words of the UVT group for each level, and the next three columns represented the words of VT group for each level. Then common words between the UVT and VT column sets were extracted for each level, beginner, intermediate, and

advanced. Subsequently, the frequency of each common extracted word at each level was counted in each textbook to confirm that students were exposed to the words fewer than 12 times and ensure that both groups were exposed to them almost equally.

The final step in this process was determining the type of each extracted word in terms of whether it was homographic or non-homographic. This was done in two phases; the first phase was determining the original type of word in Arabic, while the second was deciding whether this word is homographic or non-homographic, based on the learners' knowledge. For example, the original word شعر in Arabic is a homographic word because it can be شَعَر *shaʕar* "he felt", شِعْر *shiʕr* "poetry," or شَعْر *ʃaʕr* "hair" as determined by the diacritic; at the same time, it can be a non-homographic word, based on the learners' knowledge, if they only learned one pronunciation and meaning of this word in their textbook, such as شَعَر *shaʕar* "he felt".

Based on the previous steps of selecting the appropriate words, the final extracted word lists are detailed in the below in tables 3.5, 3.6, and 3.7. Each table includes the word in Arabic, transcription, translation of the word, original type in Arabic, type in the participants' knowledge, and frequency of the word in the textbook lessons.

3.3.1.1 Beginner-Level Word List

Sixteen common words were extracted from the UVT and VT for the beginner level (see (see Appendix 17); they appeared almost equally in the un-vowelized and vowelized beginner-level textbooks. The range of frequencies of the extracted words at this level was 1 to 12. Based on the original type of these words in Arabic, there were 13

homographic words and 4 non-homographic words (Table 3.5). However, based on the
learners' knowledge in both groups, the words were divided into 5 homographic and 12
non-homographic words (Figure 3.9).

Table 3.4 List of extracted words: beginner level

Word	OTA*	Occurrence	Type of word based on L2 Knowledge and Possibilities	Transcript	Meaning	Occurrence	Type of word based on L2 Knowledge and Possibilities	Transcript	Meaning
			UVT				VT		
بطاقة	NH	2	NH	بِطَاقَة	*bitˤāqah*	card	3	NH	بِطَاقَة	*bitˤāqah*	Card
علم	H	4	H	عَلِم	*ʕalim*	knew	4	H	عَلِم	*ʕalim*	Knew
				عِلْم	*ʕilm*	science			عِلْم	*ʕilm*	Science
لبس	H	5	H	لَبِس	*labis*	wore	4	H	لَبِس	*labis*	wore
				لِبْس	*libs*	cloth			لِبْس	*libs*	cloth
يلبس	H	1	NH	يَلْبَس	*yalbas*	Wears	1	NH	يَلْبَس	*yalbas*	Wears
وصل	H	6	NH	وَصَل	*wasˤal*	Arrived	4	NH	وَصَل	*wasˤal*	Arrived
يعلم	NH	1	NH	يَعْلَم	*yaʕlam*	Knows	1	NH	يَعْلَم	*yaʕlam*	Knows
جلس	H	1	NH	جَلَس	*dʒalas*	sat	1	NH	جَلَس	*dʒalas*	he sat
علاقة	H	3	NH	عَلَاقَة	*ʕalāqah*	Relationship	2	NH	عَلَاقَة	*ʕalāqah*	Relationship
سكن	H	5	H	سَكَنَ	*sakana*	dwelled	3	H	سَكَنَ	*sakana*	dwelled

				سَكَنْ	*sakan*	Residence			سَكَنْ	*sakan*	Residence
حمام	H	2	NH	حَمَّام	*ħammām*	bathroom	2	NH	حَمَّام	*ħammām*	bathroom
وطن	H	1	NH	وَطَن	*watˤan*	homeland	5	NH	وَطَن	*watˤan*	homeland
أدب	H	7	NH	أَدَب	*ʔadab*	literature	6	NH	أَدَب	*ʔadab*	literature
أكل	H	4	H	أَكَل	*ʔakal*	ate	2	H	أَكَل	*ʔakal*	ate
				أُكْل	*ʔakl*	food			أُكْل	*ʔakl*	food
زوج	H	5	NH	زَوْج	*zawdʒ*	Husband	6	NH	زَوْج	*zawdʒ*	Husband
عمل	H	11	H	عَمِل	*ʕamil*	worked	4	H	عَمِل	*ʕamil*	worked
				عَمَل	*ʕamal*	jop			عَمَل	*ʕamal*	job
مجلة	NH	12	NH	مَجَلَّة	*madʒallah*	magazine	11	NH	مَجَلَّة	*madʒallah*	magazine
طقس	NH	8	NH	طَقْس	*tˤaqs*	weather	12	NH	طَقْس	*tˤaqs*	weather

Figure 3.9 Type of words based on learner's knowledge: beginner level

■ UVT ■ VT

| | | |
H   NH
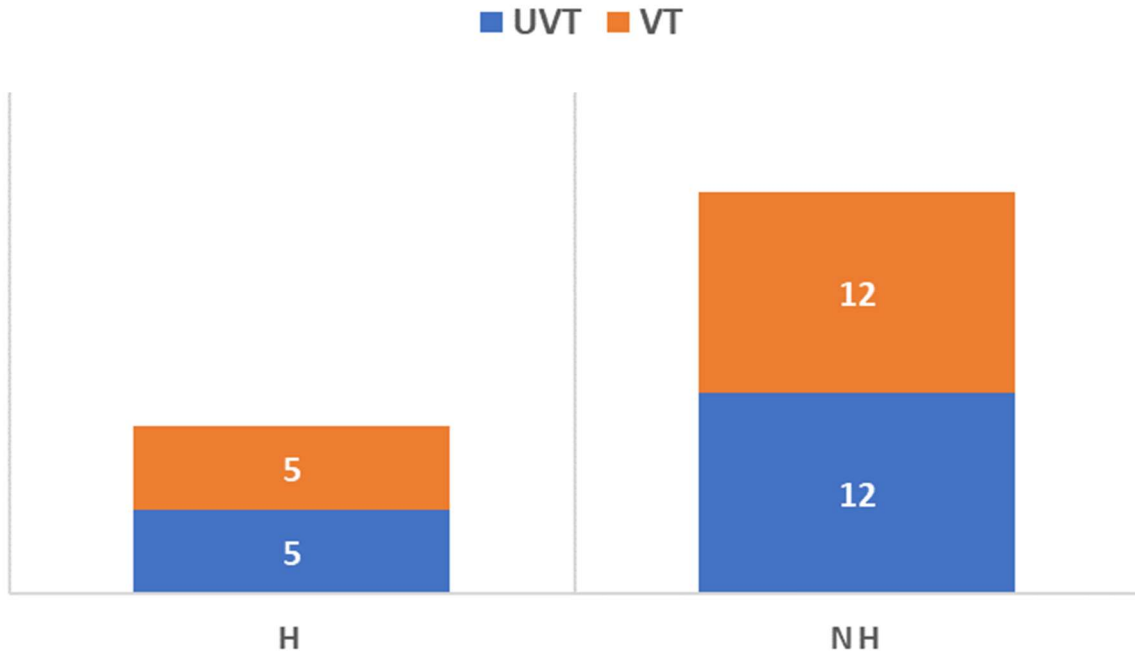
3.3.1.2   *Intermediate-Level Word List*

The list of common extracted words at the intermediate level contained 18 words (see Appendix 18), which exhibited almost equal occurrence in the intermediate lessons in the UVT and VT textbooks. The frequency of these words ranged from 1 to 10 (Table 3.6). The words were divided into the homographic and non-homographic types based on the original type in Arabic. Originally, there were 14 homographic and 4 non-homographic words; however, based on the participants' knowledge, the list included 7 homographic and 11 non-homographic words (Figure 3.10).

Table 3.5 List of extracted words: intermediate level

Word	OTA*	Occurrence	Type of word based on L2 Knowledge and Possibilities	Transcript	Meaning	Occurrence	Type of word based on L2 Knowledge and Possibilities	Transcript	Meaning
			UVT				VT		
يحضر	H	3	H	يَحْضُر	Attends	4	H	يَحْضُر	Attends
				يُحَضِّر	Prepares			يُحَضِّر	Prepares
				يُحَضِّر	Bring			يُحْضِر	Bring
حلويات	NH	5	NH	حَلَوّيات	Candies	2	NH	حَلَوّيات	Candies
فصح	NH	7	NH	فِصْح	"Religious festival"	5	NH	فِصْح	"Religious festival"
أضحى	NH	1	NH	أَضْحَى	"Religious festival"	3	NH	أَضْحَى	"Religious festival"
فطر	H	3	NH	فِطْر	"Religious festival"	5	NH	فِطْر	"Religious festival"
نصف	H	3	NH	نِصْف	Half	6	NH	نِصْف	Half
معظم	H	10	NH	مُعْظَم	Most	6	NH	مُعْظَم	Most
يرجع	H	4	NH	يَرْجِع	Go back	1	NH	يَرْجِع	Go back
رجع	H	5	NH	رَجَع	Went back	1	NH	رَجَع	Went back
مهندس	NH	4	NH	مُهَنْدِس	Engineer	3	NH	مُهَنْدِس	Engineer
عدة	H	2	NH	عِدَّة	Several	3	NH	عِدَّة	Several
صور	H	6	H	صُوَر	Photos (n)	3	H	صُوَر	Photos (n)
				صَوَّر	photoed (v)			صَوَّر	photoed (v)
حضر	H	2	NH	حَضَر	Attended	2	NH	حَضَّر	prepared
				حَضَّر	prepared			حَضَر	Attended
جمع	H	6	H	جَمَع	Combined	4	H	جَمَع	Combined

				الجَمْع	dʒamʕ	Plural			جَمْع	dʒamʕ	Plural
شعر	H	5	H	شَعَرَ	ʃaʕara	felt	2	H	شَعَرَ	ʃaʕara	felt
				شَعْر	ʃaʕr	Hair			شَعْر	ʃaʕr	Hair
فضل	H	3	H	فَضْل	fadˤl	Favor	4	H	فَضْل	fadˤl	Favor
				فَضَّل	fadˤdˤal	Preferred			فَضَّل	fadˤdˤal	Preferred
حمل	H	3	H	حَمَل	ħamal	Carried	2	H	حَمَل	ħamal	Carried
				حَمْل	ħaml	Load/Pregnancy			حَمْل	ħaml	Load/Pregnancy
تعرف	H	4	H	تَعَرَّف	taʕarraf	recognized	6	H	تَعَرَّف	taʕarraf	recognized
				تَعَرُّف	taʕarruf	Recognizing			تَعَرُّف	taʕarruf	Recognizing
				تَعْرِف	taʕrif	know			تَعْرِف	taʕrif	know

Figure 3.10 Type of words based on learner's knowledge: intermediate level

■ UVTG ■ VTG
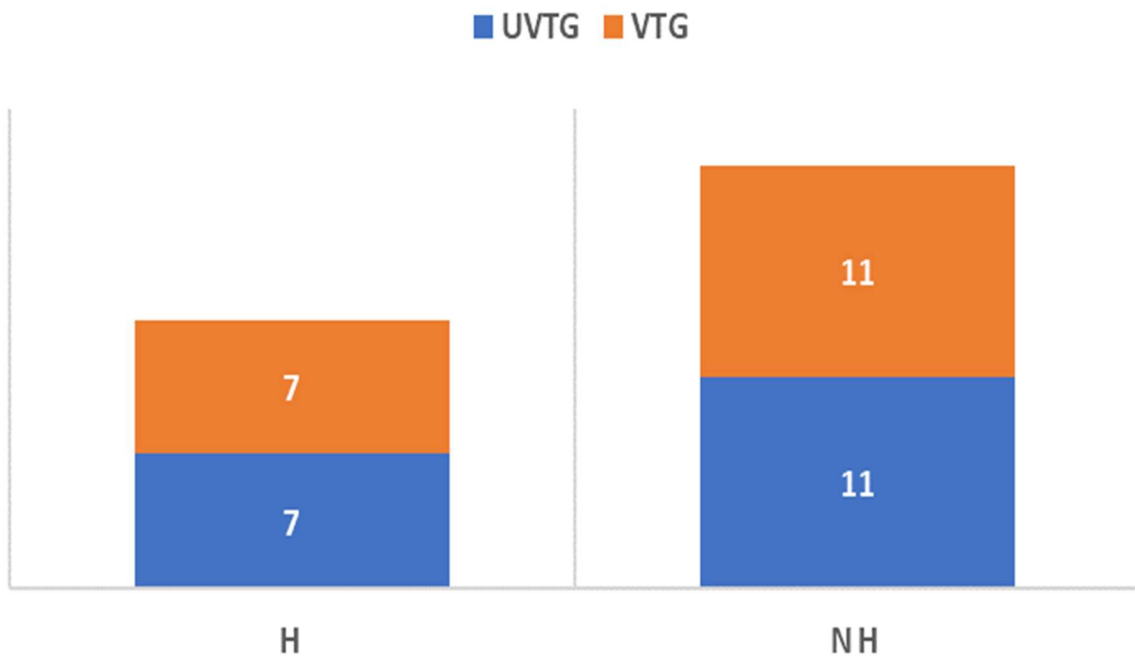
3.3.1.3   Advanced-Level Word List

 For the advanced level, 22 common words were extracted (see Appendix 19); these words exhibited almost equal occurrence in the advanced lessons in the UVT and VT. The range of frequency of these words in each textbook was 1 to 7 (Table 3.7). The words were divided into the homographic and non-homographic types based on their original types in Arabic. Originally, there were 14 homographic words and 8 non-homographic words, and the same numbers were found based on the participants' knowledge (Figure 3.11)

Table 3.6 List of extracted words: advanced level

Word	OTA*	UVT					VT				
		Occurrence	Type of word based on L2 Knowledge and Possibilities		Transcript	Meaning	Occurrence	Type of word based on L2 Knowledge and Possibilities		Transcript	Meaning
اكتشف	H	2	H	اگْتَشَف	ʔiktaʃaf	Discovered	3	H	اگْتَشَف	ʔiktaʃaf	Discovered
				اكْتُشِف	ʔuktuʃif	Was discovered			اكْتُشِف	ʔuktuʃif	Was discovered
يكتشف	H	2	H	يَگْتَشِف	yaktaʃif	Discovers	2	H	يَگْتَشِف	yaktaʃif	Discovers
				يُگْتَشَف	yuktaʃaf	Is discovered			يُگْتَشَف	yuktaʃaf	Is discovered
قصر	H	4	NH	قَصْر	qasˤr	palace	1	NH	قَصْر	qasˤr	palace
امتد	H	4	NH	امْتَد	ʔimtad	Extended	2	NH	امْتَد	ʔimtad	Extended
يمتد	H	2	H	يَمْتَد	yamtad	Extends	1	H	يَمْتَد	yamtad	Extends
حول	H	3	H	حَول	ħawl	About/Around	3	H	حَول	ħawl	About/Around
				حَوَّل	ħawwal	Transferred			حَوَّل	ħawwal	Transferred
يقتل	H	1	H	يَقْتُل	yaqtul	Kills	1	H	يَقْتُل	yaqtul	Kills
				يُقْتَل	yuqtal	Is Killed			يُقْتَل	yuqtal	Is Killed
شدة	NH	2	NH	شِدَّة	ʃidda	Strength	1	NH	شِدَّة	ʃidda	Strength
مثل	H	2	H	مَثَّل	maθθal	Represented	**2**	H	مَثَّل	maθθal	Represented
				مِثْل	miθl	Like			مِثْل	miθl	Like
يمثل	H	1	H	يُمَثِّل	yumaθθil	Represents	1	H	يُمَثِّل	yumaθθil	Represents
				يُمَثَّل	yumaθθal	Is represented			يُمَثَّل	yumaθθal	Is represented
حرم	H	2	H	حَرَم	ħarama	Banned	2	H	حَرَم	ħarama	Banned
				حَرَّم	ħarram	banned			حَرَم	ħaram	Campus
				حُرِم	ħurim	Was banned			حُرِم	ħurim	Was banned
حزن	H	4	H	حَزِن	ħazin	Saddened	2	H	حَزِن	ħazin	Saddened

				حُزن	ḥuzn	Sadness			حُزن	ḥuzn	Sadness
أمة	H	1	NH	**أمَّة**	*ʔummah*	Nation	1	NH	**أمَّة**	*ʔummah*	Nation
بلغ	H	2	NH	**بَلَغ**	*balaɣ*	Reached	2	NH	**بَلَغ**	*balaɣ*	Reached
يبلغ	H	1	H	**يَبْلُغ**	*yabluɣ*	Reaches	1	H	**يَبْلُغ**	*yabluɣ*	Reaches
				يُبْلِغ	*yubliɣ*	Tells			**يُبْلِغ**	*yubliɣ*	Tells
مرحلة	H	1	NH	**مَرْحَلَة**	*marḥala*	Stage	3	NH	**مَرْحَلَة**	*marḥala*	Stage
مركز	H	3	NH	**مَرْكَز**	*markaz*	Center	4	NH	**مَرْكَز**	*markaz*	Center
توقف	H		H	**تَوَقَّف**	*tawaqaf*	Stopped		H	**تَوَقَّف**	*tawaqaf*	Stopped
				تَوَقُّف	*tawaqquf*	Stopping			**تَوَقُّف**	*tawaqquf*	Stopping
حكواتي	NH	3	NH	**حَكَوَاتي**	*ḥakawātī*	Narrator	1	NH	**حَكَوَاتي**	*ḥakawātī*	Narrator
نقد	H	2	H	**نَقَد**	*naqad*	Criticized	2	H	**نَقَد**	*naqad*	Criticized
				نُقِد	*nuqid*	Was criticized			**نُقِد**	*nuqid*	Was criticized
				نَقْد	*naqd*	criticism			**نَقْد**	*naqd*	criticism
أثبت	H	2	H	**أثْبَت**	*ʔaṯbat*	proved	2	H	**أثْبَت**	*ʔaṯbat*	proved
				أثْبِت	*ʔuṯbit*	Prove (request)			**أثْبِت**	*ʔuṯbit*	Prove (request)
				أُثْبِت	*ʔaṯbit*	Was proved			**أُثْبِت**	*ʔaṯbit*	Was proved
وصف	H	7	H	**وَصَف**	*waṣʕaf*	described	2	H	**وَصَف**	*waṣʕaf*	described
				وُصِفَ	*wuṣʕifa*	Was described			**وُصِفَ**	*wuṣʕifa*	Was described
				وَصْف	*waṣʕf*	Description			**وَصْف**	*waṣʕf*	Description

Figure 3.11 Type of words based on learner's knowledge: advanced level
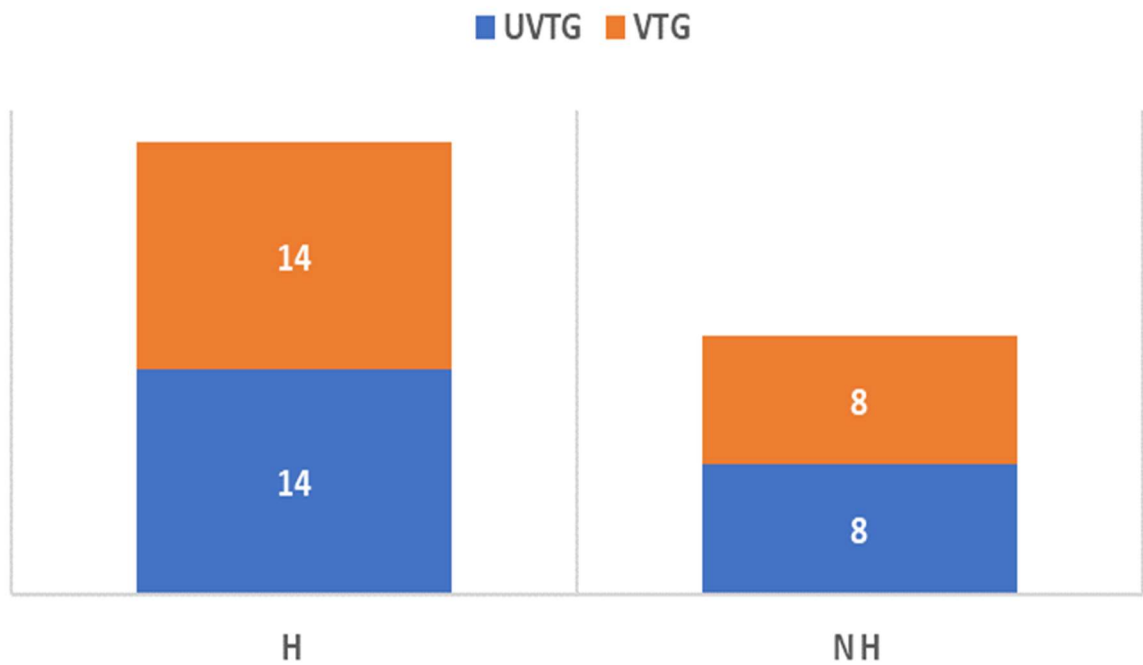
The words for each level were extracted to serve the research tasks as a list of vowelized and un-vowelized words to measure the speed and accuracy of each word recognition as individual words (first task). Moreover, most of these words were used in the context task as target words to measure the accuracy and comprehension of these words in their context under two conditions—vowelized and un-vowelized—as well as the speed and accuracy for each vowelized and un-vowelized text (as a whole text).

The texts that used in the second task were also designed according to many standards for each level.

3.3.2   Texts

Six texts were designed, with two for each level, where one was vowelized and the other was un-vowelized. Many criteria were considered to ensure that all the texts were suitable for the learners' levels in terms of length and difficulty. According to the scores of the proficiency placement test, the three groups placed at end of the beginner, end of the intermediate, and advanced levels. These three levels correspond roughly to ACTFL's intermediate low, intermediate high, and advanced, respectively. The study was conducted at the end of the second semester of the school year.

According to the American Council on the Teaching of Foreign Languages (ACTFL, 2012) standards for types of reading texts, learners at the intermediate low level are able "to understand some information from simple connected texts dealing with a limited number of personal and social needs" (ACTFL, 2012). Thus, in this study, the two beginner texts covered the main topics that had already been discussed in the respective textbooks. Hence, the two texts at this level were short texts related to normal daily life activities. Learners at the intermediate high level can understand texts related to personal and social topics based on the readers' interest and knowledge from their textbooks. They can comprehend texts, including description and narration. Accordingly, the texts designed in this study were descriptive and narrative texts covering topics that relate to the learners' interest and knowledge in their textbooks. As for ACTFL's Advanced low level, learners at this level can read about topics that are new to them. They can comprehend the main idea and supporting details of narrative and descriptive texts concerning real-world topics. Moreover, these learners can fill the gaps in their

lexical and structural knowledge by using contextual clues. Their comprehension is also supported by their background and language knowledge. Hence, in this study, the two texts at this level were factual texts relating to the real world.

The ACTFL (2012) standards only focus on reading comprehension, and they do not mention any standards related to the speed or accuracy of reading. Consequently, one of the important resources that assists in designing appropriate texts for the learners' level is the learners' textbooks. Hence, the type, topic, difficulty, and length of each text in the participants' textbooks were also considered. Moreover, all the texts in this task were revised by five experts working in the field of Arabic language acquisition. They provided a great deal of feedback to improve the texts in terms of their length and difficulty, and all their comments were considered.

Three teachers of Arabic as an L2 were asked to provide feedback to verify the suitability of the texts for each level. In addition, a pilot study was conducted to examine many aspects of the research tasks, including suitability; thus, the performance and feedback of the learners who participated in the pilot study also contributed to improving the texts in terms of their length and difficulty so that they would be as appropriate as possible for each level.

The second task of this research measured the role of diacritics in the whole text in terms of the reading speed and accuracy, as well as in the target words, to determine the diacritics' effect on the reading accuracy and comprehension of these words in each text. The target words in each text were selected from the common words that were extracted from the UVT and VT, and they were controlled in terms of their suitability,

familiarity, and equality of the participants' exposure. The text in this part of task worked as a distraction that assisted in measuring the accuracy of the participants' understanding of each target word in the context. Based on the previous criteria, the characteristics of the texts are given below.

3.3.2.1 Beginner-Level Texts

At the beginner level, two texts were designed (see Appendixes 20-21), one vowelized and the other un-vowelized. These texts were almost equal in terms of length and difficulty. The type of the first text was a narrative in the form of a short story about a person's basic daily life activities; it comprised 118 words and 475 characters. Similarly, the second text was a narrative short story about another person's basic daily life activities; it comprised 118 words and 462 characters (Table 3.7). Because of the effect of frequency of the words in the text, both texts were subject to frequency analysis to determine the frequency by counting the number of "token" words and "types" of words. According to Nation (2001), determining the number of token words means counting every word form in a spoken or written text, so each occurrence of the same word forms appearing more than once is counted. In contrast, the "type" means that a word is counted only once, even if it occurs more than once (Table 3.7; Figure 3.12). The AntConc 3.4.4w software program was used to determine tokens and types of words and their frequencies in the vowelized and un-vowelized text to ensure a high level of homogeneity between the two texts. In both beginner texts, there were 118 tokens and 94 types. For the total frequencies of repeated words, in the vowelized text, 12 words were repeated 36 times,

and in the un-vowelized text, 15 words were repeated 39 times, as shown in Tables 3.8

and 3.9 Each of the remaining words occurred only once in each text.

Table 3.7 Texts analyses: beginner level

	Vowelized text	Un-vowelized text
Type of text	Narrative text- Short story	Narrative text- Short story
Total of Words	118	118
Total of Characters (without diacritics)	475	462
Number of Word Types	94	94
Number of Word Tokens	118	118

Figure 3.12 Texts homogeneity: beginner level
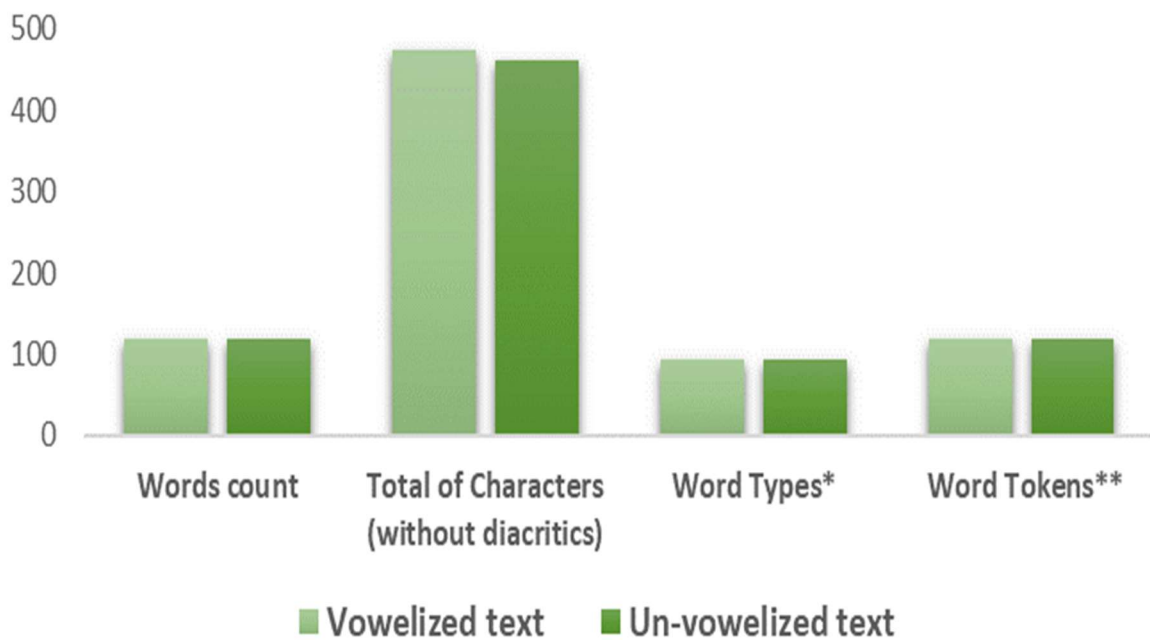
Table 3.8 Words frequencies of vowelized text: beginner level

أحمد	ثم	في	من	إلى	العامل	العاملين	العمل	اليوم	ذلك
8	4	4	4	2	2	2	2	2	2
عن	وجد	أخذها	أخرج	أصبح	أعطاه	أكل	أن	أهمية	إفطاره
2	2	1	1	1	1	1	1	1	1
استيقظ	الآخرين	الاجتهاد	الباب	الحافلة	المدير	المكان	المنزل	النوم	الوقت
1	1	1	1	1	1	1	1	1	1
باردا	بدأ	بسرعة	بطاقة	بعيدا	بمديره	تحت	جائزة	جد	جلس
1	1	1	1	1	1	1	1	1	1
جيدة	حصد	خرج	دخل	دقيقة	رأى	زرع	سكن	شقة	شيء
1	1	1	1	1	1	1	1	1	1
صنع	طقس	علاقات	علم	عمل	عمله	غرفة	فرح	فيها	كان
1	1	1	1	1	1	1	1	1	1
كل	لأن	لأنه	لبس	لم	ليستفيد	ماذا	مجتهد	مجلة	مع
1	1	1	1	1	1	1	1	1	1
مكان	مكتبه	ملابس	مهم	مهندس	موضوعا	نوم	وأهمية	واجتهاد	والآن
1	1	1	1	1	1	1	1	1	1
وحمام	وصل	وعلاقة	وفهم	ومطبخ	ومن	وهو	يسكن	يعلم	يعني
1	1	1	1	1	1	1	1	1	1
يقرأ	يقضيها	يكن	يلبس						
1	1	1	1						

Table 3.9 Words frequencies of un-vowelized text: beginner level

العمل	أن	هل	من	عن	ثم	القطار	إلى	حسن	في
2	2	3	3	3	3	3	3	3	4
أيضا	أكل	أكثر	أكبر	أحب	كل	سائق	ذهب	بلا	اليوم
1	1	1	1	1	2	2	2	2	2
القريبة	العمال	الطرق	الصيفية	السماء	الجميل	التقنية	التفاصيل	استيقظ	استغرق
1	1	1	1	1	1	1	1	1	1
تحفظ	تأخر	بهذا	بطاقة	بسرعة	بحث	بجانب	النوم	المنزل	الملابس
1	1	1	1	1	1	1	1	1	1
ستعمل	سأل	ذلك	خرج	حمام	جميلا	جلس	تلك	تفاحة	تساءل
1	1	1	1	1	1	1	1	1	1
غرفته	عمل	علم	علاقة	طويلا	طقس	صنع	صافية	سيارة	سكن
1	1	1	1	1	1	1	1	1	1
لقد	لذلك	لبس	لأن	كيف	كي	كان	قرر	قرأ	فهم
1	1	1	1	1	1	1	1	1	1
ملابس	مكانه	معلومات	مشرقة	محطة	مجلة	لها	لم	للقطار	لكنه
1	1	1	1	1	1	1	1	1	1
يعلم	يحتاج	وقتا	وصل	والشمس	هذه	نفسه	موعد	موضوعا	مناسب
1	1	1	1	1	1	1	1	1	1
					يلبس	يكن	يقرأ	يعمل	
					1	1	1	1	

3.3.2.2 Intermediate-Level Texts

At the intermediate level, two texts were also designed, one vowelized and the other un-

vowelized (see Appendixes 22-23). These texts also were almost equal in terms of their

length and difficulty. The vowelized text was a description of "Reading." It comprised

141 words and 641 characters. Similarly, the second text was a description of "Holidays";

the length of this text was 141 words and 653 characters (Table (3.10); Figure (3.13).

Moreover, the tokens and types were counted using the AntConc 3.4.4w   software

program to identify the words and their frequencies to ensure a high level of homogeneity

between the vowelized and un-vowelized texts. There were 142 tokens and 118 types in

the vowelized text, while in the un-vowelized text, there were 141 tokens and 118 types.

In terms of the total number of frequencies, in the vowelized text, 13 words appeared 37

times, and in the un-vowelized text, 12 words appeared 32 times (Tables 3.11 and 3.12).

All the other words appeared only once.

Table 3.10 Texts analyses: intermediate level

	Vowelized text	**Un-vowelized text**
Type of text	Description text	Description text
Total of Words	141	141
Total of Characters (without diacritics)	641	653
Number of Word Types*	118	118
Number of Word Tokens**	141	141

Figure 3.13 Texts homogeneity: intermediate level

Bar chart with y-axis from 0 to 700.

	Vowelized text	Un-Vowelized text
Total of Words	~140	~140
Total of Characters (without diacritics)	~640	~650
Word Types	~120	~120
Word Tokens	~140	~140

Legend: ■ Vowelized text ■ Un-Vowelized text
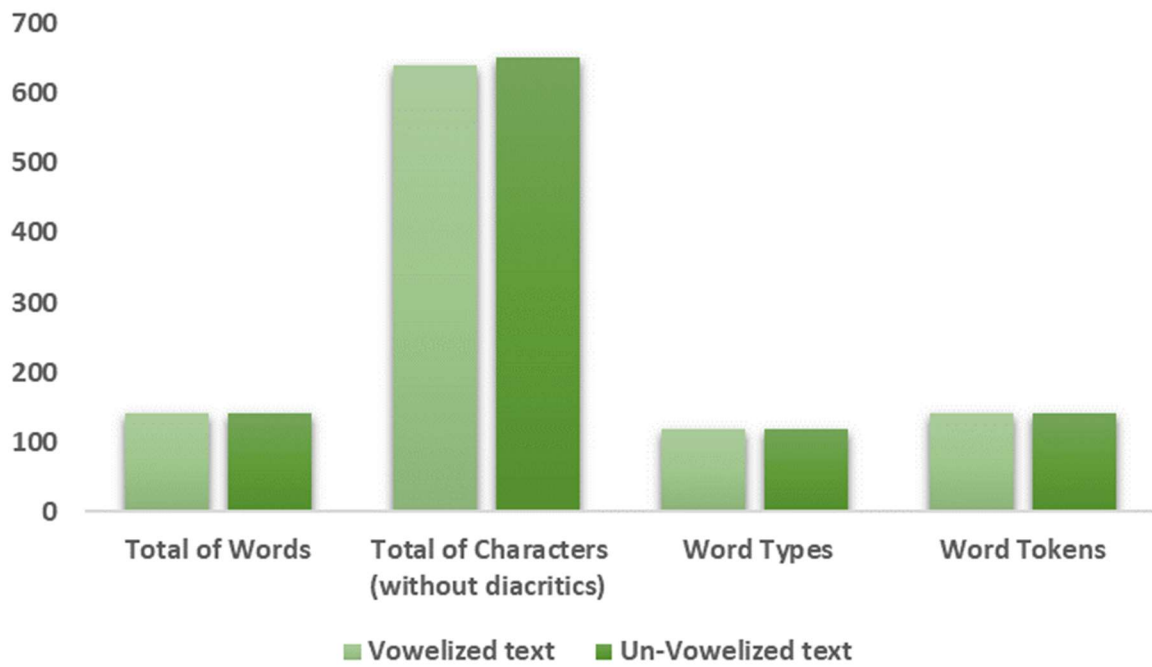
Table 3.11 Words frequencies of vowelized text: intermediate level

من	إلى	الكتب	فيه	على	القراءة	آخر	بك	بين	تصنع
6	4	4	4	3	2	2	2	2	2
في	كل	يحب	أتى	أفكار	أنواع	احتفالا	اكتساب	الإنسان	التاريخ
2	2	2	1	1	1	1	1	1	1
الجيد	الدول	الذي	العلم	العلمية	الفرق	القارئ	القراء	الكتابة	الماضي
1	1	1	1	1	1	1	1	1	1
المتميزين	المثقفون	المستقبل	المعرفة	المفيدة	المكتبات	انتقال	باحثا	بالقراءة	بعد
1	1	1	1	1	1	1	1	1	1
بعضها	بفضل	بلد	بما	به	تحتوي	تحمله	تختلف	تخصص	تساعد
1	1	1	1	1	1	1	1	1	1
تعرف	تقدم	تلك	ثم	جديدة	حضر	حمل	حياته	ذلك	رجع
1	1	1	1	1	1	1	1	1	1
شكر	صور	عالم	عدة	عقل	عقله	فائدة	فالقارئ	فالكتاب	فصل
1	1	1	1	1	1	1	1	1	1
فطور	فقط	فمنهم	فهم	فيها	قراءة	كأنها	كتب	لأن	لك
1	1	1	1	1	1	1	1	1	1
للأفضل	للقراء	للقراءة	منهم	ما	متأخر	متقدم	مشروبات	معارف	معظم
1	1	1	1	1	1	1	1	1	1
معلوماتها	نصف	نهض	هو	والأدب	والقراءة	والمؤلفين	وبعضها	وجمع	وحلويات
1	1	1	1	1	1	1	1	1	1
وشعر	وعقل	وقد	وقرأها	ولو	ومنهم	ويختلف	ويقدم	وينتقل	يحتفل
1	1	1	1	1	1	1	1	1	1
يحضر	يدرس	يديك	يرجع	يستفيد	يوم	يوما			
1	1	1	1	1	1	1			

Table 3.12 Words frequencies of un-vowelized text: intermediate level

وبعضهم	في	على	عدة	التي	قد	تلك	إلى	وربما	من
2	2	2	2	2	3	3	3	4	5
احتل	إليها	أو	أهل	أن	أطول	أدوات	آخر	يفضل	يحضر
1	1	1	1	1	1	1	1	2	2
الذي	الذهاب	الحي	التاريخية	البلدة	البلاد	البحر	الإجازات	الأماكن	استمر
1	1	1	1	1	1	1	1	1	1
بتجربة	اليوم	الوقت	الهواية	الناس	المشهورة	الكثير	الفعاليات	الغوص	الزيارة
1	1	1	1	1	1	1	1	1	1
تقاليدهم	تاريخه	بهذه	بمناسبات	بلد	بقراءته	بفضل	بعضهم	بسعادتهم	بحثا
1	1	1	1	1	1	1	1	1	1
ذكرياتهم	خارج	حمل	حلويات	حضر	حدائق	جمع	جزءا	ثم	تميز
1	1	1	1	1	1	1	1	1	1
عن	عامة	عالم	طعامهم	طعام	صور	شعر	رجع	رائعة	ذلك
1	1	1	1	1	1	1	1	1	1
متأخر	ما	ليقدمها	ليستمع	لقضاء	لأصدقائه	كتابا	قضاء	فيها	فيه
1	1	1	1	1	1	1	1	1	1
نصف	موائدهم	مفيدة	معهم	معه	معظم	معارضها	مسافات	مخيمات	مجسمات
1	1	1	1	1	1	1	1	1	1
وقت	وصور	وشاركهم	وذاق	وتعرف	وتختلف	وبهذا	والمهرجانات	وأحب	هدية
1	1	1	1	1	1	1	1	1	1
يستمتع	يسافرون	يسافر	يرجع	يحتفل	يحب	يجده	ومنهم	ومتاحفها	وقد
1	1	1	1	1	1	1	1	1	1
			يومه	ينتقل	يكون	يقضون	يقدمونه	يعيش	يسكنون
			1	1	1	1	1	1	1

3.3.2.3 Advanced-Level Texts

At the advanced level, two texts were also designed, one vowelized and the other un-vowelized (see Appendixes 24-25). These texts were almost equal in terms of length and difficulty. The first text was a factual text on the "United Nations," with a length of 148 words and 700 characters. Similarly, the second text (un-vowelized) was also a factual text about "International Arabic Language Day," comprising 148 words and 753 characters (Table 3.12; Figure 3.14). Again, the tokens and types of words were counted using AntConc 3.4.4w to identify the words and their frequencies and ensure that the two texts achieved a high level of homogeneity. In the vowelized text, there were 148 tokens and 118 types, whereas in the un-vowelized text, there were 141 tokens and 118 types. For the total number of frequencies, 14 words appeared 44 times in the vowelized text, while 19 words appeared 49 times in the un-vowelized text (Tables 3.13 and 3.14). All the other words appeared only once.

Table 3.13 Texts analyses: advanced level

	Vowelized text	Un-vowelized text
Type of text	Factual texts	Factual texts
Total of Words	148	149
Total of Characters (without diacritics)	700	735
Number of Word Types*	119	120
Number of Word Tokens**	148	149

Figure 3.14 Texts homogeneity: advanced level
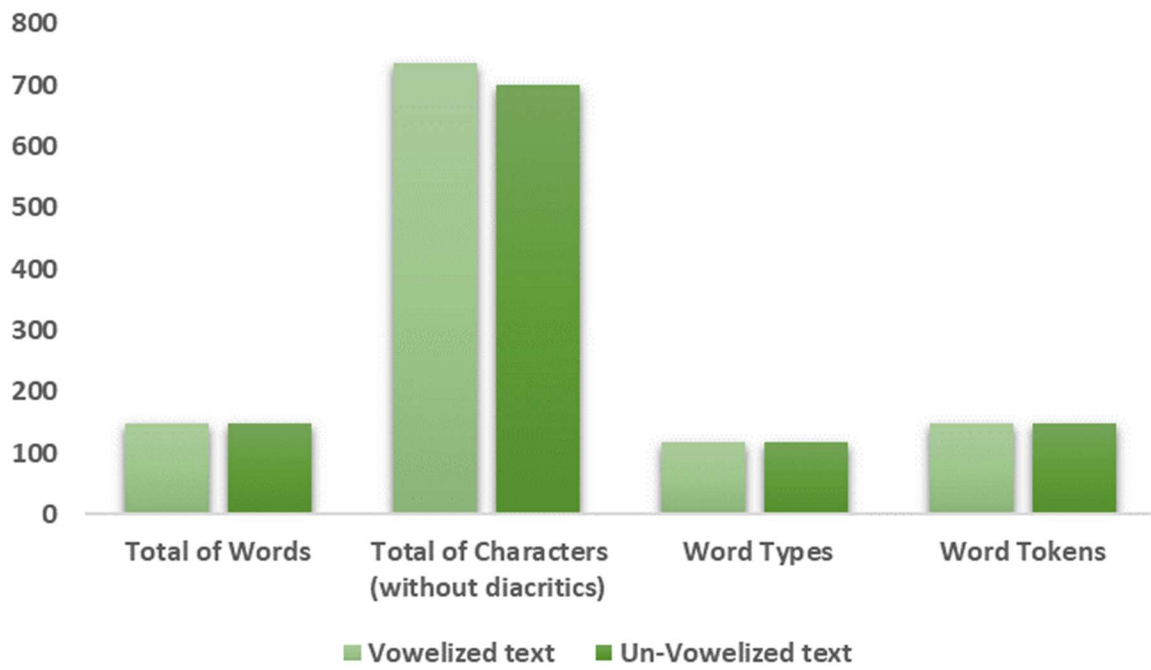
Table 3.14 Words frequencies of vowelized text: advanced level

من	في	كل	اليونيسكو	أن	إلى	العالم	الثقافات	الثقافة	المعرض
6	5	5	5	3	3	3	2	2	2
تعزيز	**عدد**	**مهما**	**هذا**	آثار	أثبت	أثره	أقامت	أكدت	أمة
2	**2**	**2**	**2**	1	1	1	1	1	1
أمم	أهميته	أو	أي	إقرارا	احتفال	اكتشف	التعدد	التنوع	التواصل
1	1	1	1	1	1	1	1	1	1
التي	الثقافي	الثلث	الديواني	الذي	الشارقة	العالمي	العالمية	العامة	العربي
1	1	1	1	1	1	1	1	1	1
العربية	الفن	اللغات	اللغوي	اللوحات	المئات	المديرة	المعارض	المهمة	الموضوع
1	1	1	1	1	1	1	1	1	1
اليوم	امتدادا	بالعربية	بالفن	بتراث	بشدة	بعرض	بقية	بلغ	بمساهماتها
1	1	1	1	1	1	1	1	1	1
بين	تاريخية	تعد	تعلم	تقيمها	تمثيل	تهتم	ثقافة	ثقافي	ثقافية
1	1	1	1	1	1	1	1	1	1
جائزة	حرم	خصوصا	خط	خطوط	دور	زوارها	عبر	عجز	عدد
1	1	1	1	1	1	1	1	1	1
على	فيما	قاد	قد	قدم	قصور	لعدد	للتعريف	للخط	للغات
1	1	1	1	1	1	1	1	1	1
له	مثل	مراكز	مرحلة	مركزا	معالجة	معرضا	منتج	منظمة	وأشارت
1	1	1	1	1	1	1	1	1	1
وأوضحت	والأدب	والخط	واللغوي	والنقد	وتعتبر	وتعزيز	وحول	وصف	وضم
1	1	1	1	1	1	1	1	1	1
وما	ويبلغ	ويعتبر	ويعد	يبين	يتعلق	يكتشف	يمتد	يمثل	
1	1	1	1	1	1	1	1	1	

Table 3.15 Words frequencies of un-vowelized text: advanced level

من	البنك	القرارات	النقض	حق	يعتبر	التي	الدول	الدولي	الصناعية
8	3	3	3	3	3	2	2	2	2
الكثير	بالمئة	حول	عدد	في	كما	مجلس	وقد	ويعتبر	أدوارهم
2	2	2	2	2	2	2	2	2	1
أربعة	أساسيا	أصدر	أعضاء	أمة	أن	إصدار	إلى	اثنين	اطلع
1	1	1	1	1	1	1	1	1	1
اكتشف	الأصوات	الأمن	التابع	التصويت	التقاليد	التنفيذيين	الذين	السد	الصين
1	1	1	1	1	1	1	1	1	1
العالم	العالي	العراق	العشرة	القروض	القضايا	المتحدة	المتعلقة	المجتمع	المجلس
1	1	1	1	1	1	1	1	1	1
المديرين	المطلع	النقد	الهيمنة	امتدادا	بالقاسية	بشدة	بعض	بكل	بلادهم
1	1	1	1	1	1	1	1	1	1
بلغ	تأثيرهم	تتركز	تحتكر	تقاليد	تقديم	تقليدا	تمثيل	تمويل	ثلاثة
1	1	1	1	1	1	1	1	1	1
حرم	حوالي	سياساته	صندوق	عبر	عجز	على	فدولة	قراراته	قصور
1	1	1	1	1	1	1	1	1	1
قضايا	كبلجيكا	كثير	كل	كيانا	لأعضائه	لبعض	لتلك	للأمم	للدول
1	1	1	1	1	1	1	1	1	1
لها	مازال	مثل	مرحلة	مركزا	مسار	مصر	مصلحة	ملايين	ملكا
1	1	1	1	1	1	1	1	1	1
ممارسات	منها	مهما	مواطنيها	وأثبت	وربما	وصف	وعارض	وعشرين	ولقد
1	1	1	1	1	1	1	1	1	1
وما	ومن	يبلغ	يصاحبها	يصدرها	يكتشف	يمتد	يمثل		
1	1	1	1	1	1	1	1		

3.4   Data Collection Procedures

Before conducting the study, Institution Review Board approval was obtained (see Appendix 26). The second step was determining the appropriate programs that fit with the study's needs (see participant section), then contacting the program administrators to obtain their approval to conduct the study at their universities. To obtain permission, the necessary documents about this study were provided. The third step was contacting each program coordinator and obtaining the information that would help in building and designing the research tasks; this information included the program length, types of courses, learners, and textbooks. In addition, approval was sought for contacting the teachers to ask them to provide the researcher with their syllabus, which would assist in determining the exact content of the lessons to design stable, accurate tasks. The fourth step was designing the tasks in light of the criteria mentioned above in this chapter (see materials section 3.2).

After designing the tasks of this study, the pilot study was conducted with six students from the three levels of the Arabic language course. They participated in all the tasks designed for this research. Their readings of isolated words and texts were recorded, and their answers to the comprehension questions were collected. Furthermore, their questionnaire responses were obtained. This pilot study was conducted to ensure the correct use of tasks and application of the steps. The process and results of conducting the pilot study provided the researcher with valuable information relating to the questions, such as the readability of the typeface and font size used in the first versions of the isolated word and context tasks. Moreover, conducting this pilot study enhanced the

researcher's data collection and time and process management skills. Furthermore, the opinions of the pilot study participants were considered in terms of the clarity of task instructions and the process of each task; these helped to resolve any errors, confusion, or gaps that could arise when conducting the main study.

The fifth step was visiting the first program and recruiting the subjects to participate in the study with approval from the university. These visits achieved two goals. The first was introducing the study to the learners and encouraging them to participate. The second was to observe random classes at each level to determine the methods, materials, and tools they used in learning Arabic. This allowed the researcher to determine the extents to which the learners relied on their textbooks as a main source of input and their teacher focused on using diacritics during instruction.

The sixth step was arranging the next research phases with the volunteers (potential participants) from each level by asking them to provide their names and email addresses on a signup sheet on the door of the room where the study was conducted. As the seventh step, each potential participant was given an ID number, and all the potential participants were divided into three groups based on their level. Then, a suitable time to fill out the LHQ and take the placement test was determined. After the volunteers completed the test and filled out the questionnaire, the final participants were selected according to the inclusion and exclusion criteria. (see participant section 3.1)

After determining the participants to be included in the main study for each level, each participant was contacted to set up a convenient time to complete the research experiments. The experiments were conducted in a quiet, private room. When each

participant came to the room in the scheduled time, he/she read and signed a consent

form (see Appendix 27) and received brief oral instructions for completing the

experiments. The participants were asked to sit in front of a laptop screen; then, detailed

oral instructions were provided for the first experiment. Next, the participants were asked

to complete the instructions for four words as practice to ensure that they understood the

instructions correctly. Each participant was requested to wear a headset attached to the

laptop, and then the list of isolated words was presented under two conditions (vowelized

and un-vowelized) randomly. Each participant was asked to read each word aloud. Each

word appeared on the slide individually, and it was shown two times—once with

diacritics and once without—at random. The screen size was 15 inches, and the words

appeared in the Lotus Arabic Linotype font, with the text in black on a white background.

To display each word in the analysis stage, the participant was asked to press the "Enter"

button to make a sound; this assisted in measuring the duration (time) between the click

sound and the time of completing each word's reading. The participants' readings were

recorded using Audacity software.

After finishing the first experiment, each participant was requested to move to

another seat, and he/she was given detailed oral instructions about the next experiment

(contexts). Two types of texts (un-vowelized and vowelized) were used in this

experiment. The participants were asked to read the first text, which was printed on one

page (Lotus Linotype font; size 18; black color on a white background). Each participant

was requested to read the text aloud. The same procedure was followed with the second

text. All the readings were recorded using Audacity software. Then, the audio file was

named by using the participant's unique code (ID) and saved accordingly. After having

read the text, each participant was given a sheet with comprehension questions (see

Appendixes 28-33) and a new copy of the first text in which the target words were

highlighted. The participant was asked to write the meaning of each target word based on

its position in the text. The time for completing this part of the task (comprehension

questions of text 1) was limited to 15 minutes. Then, another sheet of comprehension

questions matched with a new copy of the second text, in which the target words were

again highlighted, was given to the participants. Each participant was again requested to

write the meaning of each target word based on its position in the second text. This part

of the task was limited to 15 minutes. The comprehension tasks were printed on a

separate sheet of paper containing the participant's ID and the list of words, with blank

space to write the answers. At the second university, the same steps and procedures were

followed.

However, after the volunteers of both programs completed the test and filled out

the questionnaire, some were excluded (two beginners and three intermediates) from the

final sample because they were heritage learners, had lived in an Arabic country, or did

not attend the scheduled experiment session. Ultimately, 54 participants from both

programs were included in the study (see the section on participants 3.1).

3.5   Design, Measures, and Data Analysis

Two main tasks were designed to measure three dependent variables (reading speed,

accuracy, and comprehension) under two main conditions (vowelized and un-vowelized)

for two main groups (UVT and VT) at three different proficiency levels of Arabic language acquisition (beginner, intermediate, and advanced).

3.5.1 Isolated Words Task

This task aimed to examine the effect of diacritics on word recognition by measuring the recognition speed and accuracy of isolated words under two conditions, vowelized and un-vowelized. The isolated word task was designed to address the first research question, which was as follows: Do diacritics play a role in the word recognition of individual (isolated) words for learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of Arabic L2 acquisition?

Each participant was asked to read two lists of isolated words aloud under two conditions: vowelized and un-vowelized. Each word appeared on a screen and, by clicking "enter" bottom on the keyboard, a sound was emitted, indicating the starting point of the word appearance. Each reading was recorded using Audacity and analyzed using the PRAAT software program. To determine the word recognition (word reading speed and word accuracy), all audio recordings of the isolated words task were transcribed using ELAN software, and then the duration of recognition for each word was measured using ELAN and PRAAT.

3.5.1.1 Word Recognition Speed

The duration of word recognition was measured from the word's initial appearance until the participant stopped reading the word in milliseconds (Figure 3.15). The values of each word recognition speed were recorded in an Excel sheet for each participant, and

then the average speeds of the vowelized and un-vowelized words were calculated for each participant. Homographic and non-homographic speed values were also entered in the Excel sheet for each participant, then counted in percentages. To detect the statistical significance of certain factors (i.e., the textbook group, conditions. and interaction between group and word conditions), a two-way repeated-measures ANOVA and linear mixed model were run in SPSS software, and the results for the vowelized condition were obtained, followed by those of the un-vowelized condition.

Figure 3.15 Word recognition speed in PRAAT
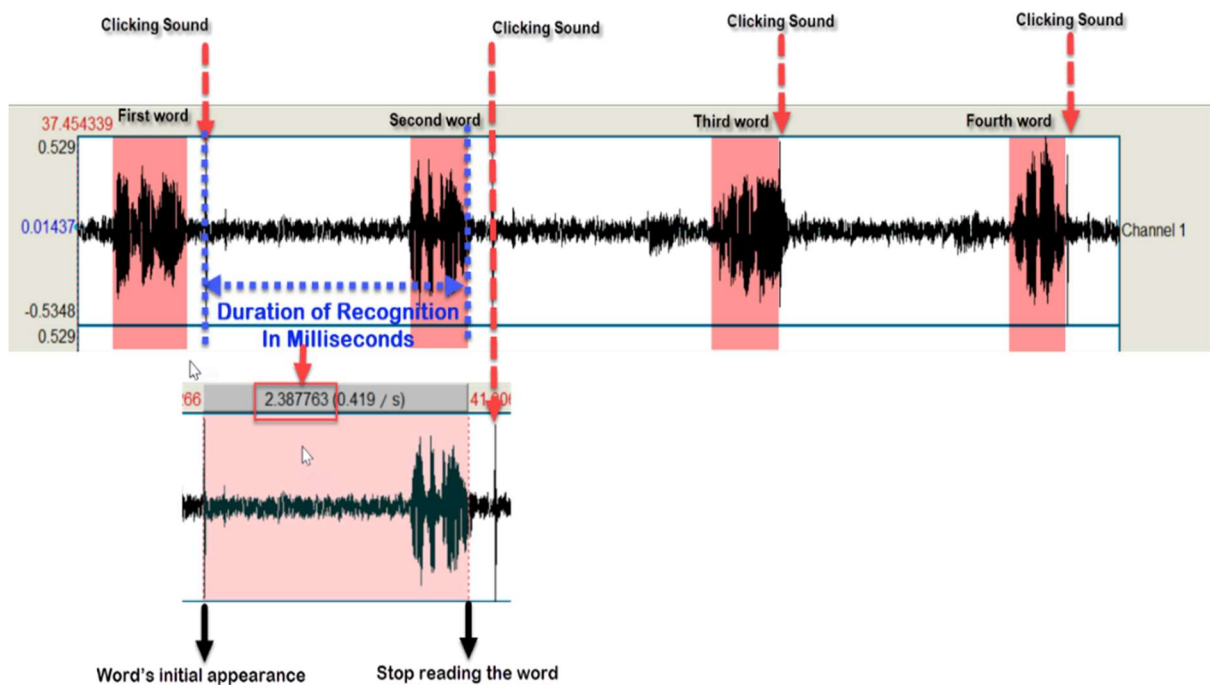
3.5.1.2   Word Recognition Accuracy

The word recognition accuracy in the first task (Isolated Word) was evaluated in terms of

two main scales, namely a general scale and a detailed scale. These are described below.

3.5.1.2.1   General scale

The scale used the following criteria: correct pronunciation of the word = 1 point,

incorrect pronunciation = 0 points, and incorrect followed by correct pronunciation (i.e.,

hesitation) = 0.5 points.

3.5.1.2.2   Detailed scale

To provide more specific and accurate results, a detailed scale was employed. In this

scale, each word was divided into many parts according to the numbers of characters in

each word. The last character of each word was excluded, as this usually represents the

case marker in Arabic. Then, the numbers of correct and incorrect syllables in each word

were calculated. Finally, the word accuracy percentage was measured using the following

equation:

$$\frac{\textbf{(Number of characters in the word} - \textbf{1)} - \textbf{(Total number of character errors)}}{\textbf{(Total numbers of characters in the word} - \textbf{1)}} \times \textbf{100}$$

For example, the word بَيْلُغ *yabluɣ* "reaches" has three parts, namely ي [ya], بْ [b], and

لُ [lu], the last part, غ [ɣ] was not calculated because it represents the case ending, and not

the internal diacritics. Thus, the scale of this word is 3. Accordingly, if the participants

pronounced this word with a pronunciation error in one character, such as يَبْلِغ *yabliɣ* the

accuracy of this word in the detailed scale would be 66.66%. (Figure 3.16)

Figure 3.16 Example of detailed scale of accuracy

word	غ	لـ	بـ	يـ	Detailed scale accuracy equation	Accuracy
scale	غ (—)	لُ (1)	بْ (1)	يَ (1)	$\frac{(4-1)-(\text{errors})*100}{3}$	100%
No errors	—	✓ لُ (1)	✓ بْ (1)	✓ يَ (1)	$\frac{(4-1)-(0)*100}{3}$	100%
One error	—	✗ لِ (0)	✓ بْ (1)	✓ يَ (1)	$\frac{(4-1)-(1)*100}{3}$	66%

The values of each word's accuracy in the general scale were added to an Excel sheet for

each participant, and then the values of the accuracy under the vowelized and un-

vowelized conditions were calculated in percentages for each participant. Similarly, the

values and transcriptions of accuracy based on the second scale (detailed scale) under the

vowelized and un-vowelized conditions were added to the Excel sheet for each

participant, then calculated in percentages. Furthermore, Homographic and non-

homographic accuracy values based on the general scale were also included in the Excel

sheet for each participant, and then counted in percentages. To detect the statistical

significance of certain factors (i.e., the textbook group, conditions. and interaction between group and word conditions), a two-way repeated-measures ANOVA and linear mixed model were run in SPSS software and the results were obtained.

3.5.2　Texts Task

The second task in this research (context task) aimed to measure the recognition of words in context and identify the effects of diacritics on the reading speed, accuracy, and comprehension of participants in the UVT and VT groups. This task was intended to answer the second, third, and fourth research questions.

3.5.2.1　Reading Speed

The second research question was as follows: Do diacritics play a role in reading speed for learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of Arabic L2 acquisition? To address this question, each participant was asked to read both the V and UV texts aloud. Each reading was recorded and analyzed in PRAAT, which was used to measure the duration of each text reading (from when the participant started reading the text until he/she stopped reading) in milliseconds (Figure 3.17). The values of the speed for the vowelized and un-vowelized texts were included in the Excel sheet for each participant. To detect the statistical significance of certain factors (i.e., the textbook group, conditions. and interaction between group and word conditions), a two-way repeated-measures ANOVA and linear mixed model were run in SPSS software and the results were obtained.

Figure 3.17 Reading speed of text in PRAAT
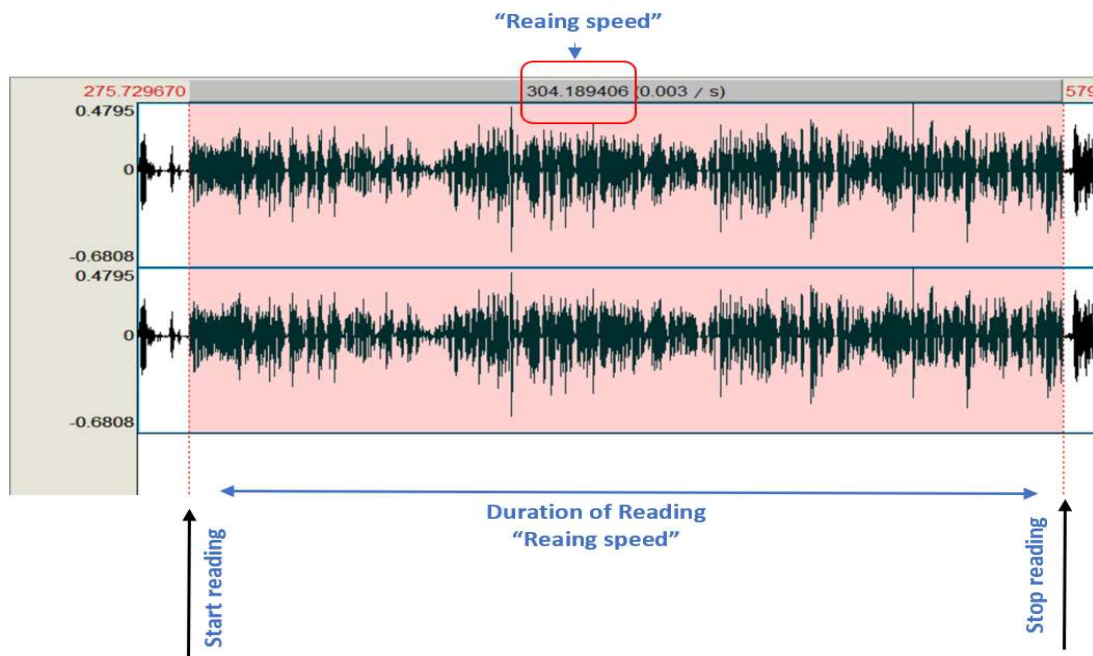
3.5.2.2   Reading Accuracy

The third research question was as follows: Do diacritics play a role in reading accuracy for learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of Arabic L2 acquisition? There were two types of accuracy that were measured, namely the accuracy of the whole texts and accuracy of the target words in each text.

3.5.2.2.1   Target Words Accuracy

The first element of accuracy in this task was the accuracy of the target words, which were controlled in terms of suitability, familiarity, and comparability of exposure

between the UVT and VT groups. This part of the task was determined based on the two main accuracy scales, the general scale and detailed scale, as used in the previous task (Isolated Words Task).

3.5.2.2.2   Whole Text Accuracy

The second component of accuracy measured in this task was the accuracy of the whole text. In this type of accuracy, the general scale scored the correct pronunciation of each word in the text with 1 point, incorrect pronunciation with 0 points, and incorrect followed by correct pronunciation (i.e., hesitation) with 0.5 points; this scale was used to obtain a broad understanding of the effect of diacritics on the reading accuracy of texts. To measure the final accuracy score of the whole text, the following equation was used:

$$\frac{\textbf{(Total number of text words} - \textbf{Total number of errors in text)}}{\textbf{Total number of text words}} \times \textbf{100}$$

The values of the whole text accuracy of the vowelized and un-vowelized text were recorded in the Excel sheet for each participant. Similarly, the values of the target words' accuracy in the vowelized and un-vowelized texts, were measured using the general and detailed scales, were calculated in percentages and added to the Excel sheet for each participant. Subsequently, two-way repeated-measures ANOVA and the linear mixed model were run in SPSS software, and the results were obtained to detect the statistical significance of certain factors (i.e., the textbook group, conditions. and interaction between group and word conditions).

3.5.2.3   Target Words Comprehension

The fourth research question was as follows: Do diacritics play a role in reading comprehension for learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of Arabic L2 acquisition? The comprehension questions were related to the target words in each text, and the participants at each level were asked to write the correct meaning of each word based on its position in the text; then, their scores were measured for each question using the following scale: correct answer = 1 point, incorrect answer = 0 points. The values of the comprehension of the vowelized and un-vowelized texts were recorded in the Excel sheet for each participant. Following this, two-way repeated-measures ANOVA and the linear mixed model were run in the SPSS software, and the results were obtained to detect the statistical significance of certain factors (i.e., the textbook group, conditions, and interaction between group and word conditions).

3.6   Summary

This chapter discussed the research design, steps for selecting the appropriate language programs to fit with this research, types of programs, and types of learners in each program. Fifty-Four Arabic L2 learners participated in this study. They were identified using several criteria with the application of different tools, such as the LHQ, teacher assessments (reports), and proficiency test.

Regarding materials that were used in designing the two main tasks of this study, the criteria for selecting the appropriate task contents were discussed in light of the criteria for extracting words at each level based on their suitability, familiarity, and

comparability between the UVT and VT groups. Furthermore, the criteria for designing

the vowelized and un-vowelized texts were discussed in terms of the length and difficulty

appropriate to each level, beginner, intermediate, and advanced. This description included

the final form of each task for each level. The data collection procedures were reported

for both groups. Finally, the chapter outlined the measures and data analysis procedures

used to obtain the results, which are discussed in detail in the next chapter.

Chapter 4

Findings

4.1 Overview

The purpose of this study was to examine the role of diacritics in word recognition and their impact on Arabic L2 learners' reading speed, accuracy, and comprehension at different stages of Arabic L2 acquisition by comparing the performance of two types of Arabic L2 learners: those who were   exposed to instructional materials containing diacritics, Vowelized Textbook Group (VT), and those who were exposed to instructional materials not containing diacritics, Un-Vowelized Textbook Group (UVT). This study aims to address the following research questions:

RQ 1. Do diacritics play a role in the word recognition of isolated words for learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of Arabic L2 acquisition

RQ 2. Do diacritics play a role in reading speed for learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of Arabic L2 acquisition?

RQ 3. Do diacritics play a role in reading accuracy for learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of Arabic L2 acquisition?

RQ 4. Do diacritics play a role in reading comprehension for learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of Arabic L2 acquisition?

To answer these questions, this study employs two main tasks: Isolated words, and texts.

4.2   Results of Isolated Words Task

The specific aim of the task was to measure word recognition as isolated words and identify the effect on speed and accuracy of participants in each group under two conditions: Vowelized (V) and Un-Vowelized words (UV). Isolated words task was intended to answer the first research question:

RQ 1. Do diacritics play a role in the word recognition of individual (isolated) words for learners who rely on vowelized textbooks versus those who rely on unvowelized textbooks at different stages of Arabic L2 acquisition?

To answer this question, each participant was asked to read two lists of isolated words aloud under two conditions: V and UV. Each word appeared on a screen, and, by clicking "enter" bottom on the keyboard, a sound was emitted indicating the starting point of the word. Each reading was recorded and analyzed in PRAAT software. Word recognition was measured for each level in terms of speed and accuracy. To determine reading speed, PRAAT was used to measure the duration of word recognition. This was determined from the word's initial appearance until the participant stopped reading the word as illustrated in (see Figure 3.15 in chapter 3)

To detect the statistical significance of certain factors (i.e., textbook groups, conditions and the interaction between group and conditions), both, Two-way repeated measures ANOVA and linear mixed model tests were run. The results of all the tasks are reported separately below.

4.2.1 Results of Word Reading Speed

4.2.1.1 Beginner Level

The results show a significant difference between UVT group and VT group in terms of word recognition speed. As shown in Table 4.1, VT group was faster than UVT group in reading isolated words under both V and UV conditions. The results show a significant difference between reading speed under V and UV conditions. This difference seems to

be due to the UVT group's slower average recognition of V words than UV words, while the average recognition speed of the VT group was almost the same under both V and UV conditions (Table 4.1). This also led to a significant interaction between groups and conditions, as shown in Table 4.2 and Figure 4.1.

Table 4.1 Means of reading time of isolated words: beginner level

Group	Condition	Mean	95% Confidence Interval	
			Lower Bound	**Upper Bound**
UVT	VOWELIZED	3.260	2.990	3.529
	UNVOWELIZED	2.929	2.659	3.198
VT	VOWELIZED	2.509	2.240	2.778
	UNVOWELIZED	2.503	2.233	2.772

Table 4.2 Reading time of isolated words - tests of effects: beginner level

Source	Numerator df	Denominator df	F	Sig.
Group	1	22	11.544	.003
Condition	1	22	6.010	.023
Group * Condition	1	22	5.579	.027

Figure 4.1 Reading time of isolated words: beginner level
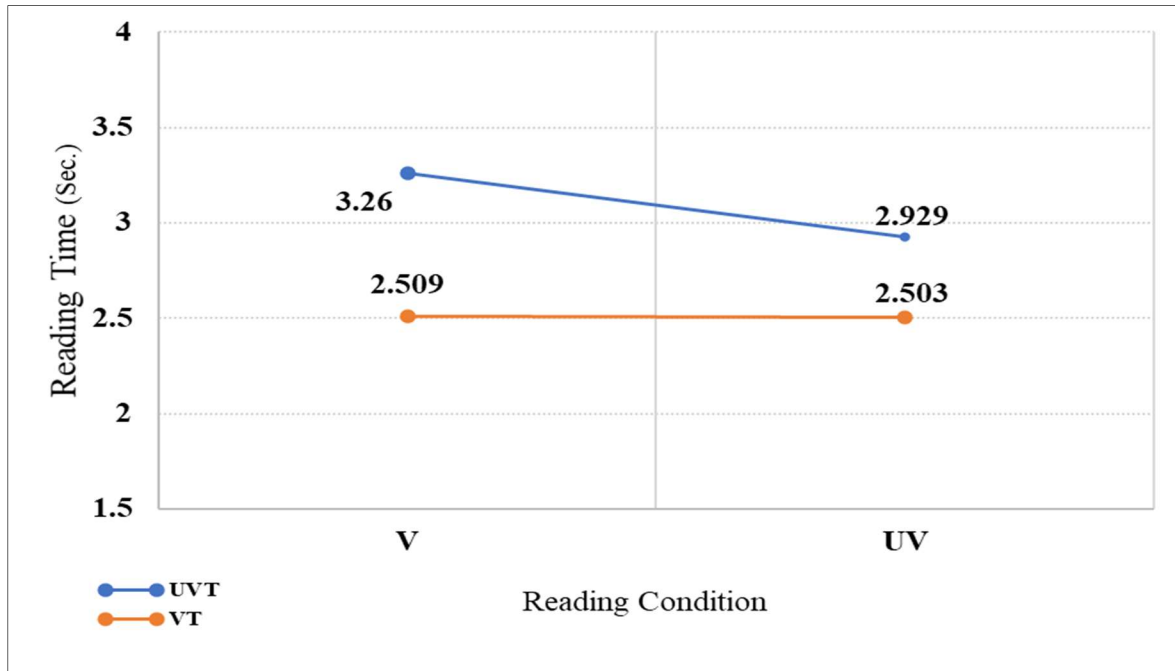
Further, there was a significant difference in terms of the reading speed of H words (Table 4.3). VT group, under both conditions, was faster than UVT group (Figure 4.2). However, no significant difference was found between the reading speed of V-H and UV-H words in general and no significant interaction was found between groups and conditions. In addition, in UVT group, the recognition of UV-H was slower than that of V-H, while, in VT group, the recognition of V-H was very slightly slower than that of UV-H as illustrated in Figure 4.2.

Table 4.3 Tests of fixed effects (homographic words): beginner level

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	22	8.091	.009
CONDITION	1	22	.303	.588
GROUP * CONDITION	1	22	.564	.461
a. Dependent Variable: H.				

As for NH words, the results similarly indicate a significant difference between UVT group and VT, as VT read NH words faster than UVT under both V and UV conditions (see Table 4.4, Figure 4.2). With regards to conditions, there was a significant difference between V-NH and UV-NH (Table 4.4). Both groups were faster in recognizing V-NH than UV-NH (Figure 4.2). However, no significant interaction was found between groups and conditions in terms of the recognition speed of NH words.

Table 4.4 Tests of fixed effects (non-homographic words): beginner level

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	22	7.614	.011
CONDITION	1	22	7.591	.012
GROUP * CONDITION	1	22	.020	.890
a. Dependent Variable: NH.				

Figure 4.2 Reading time of H-NH words: beginner level
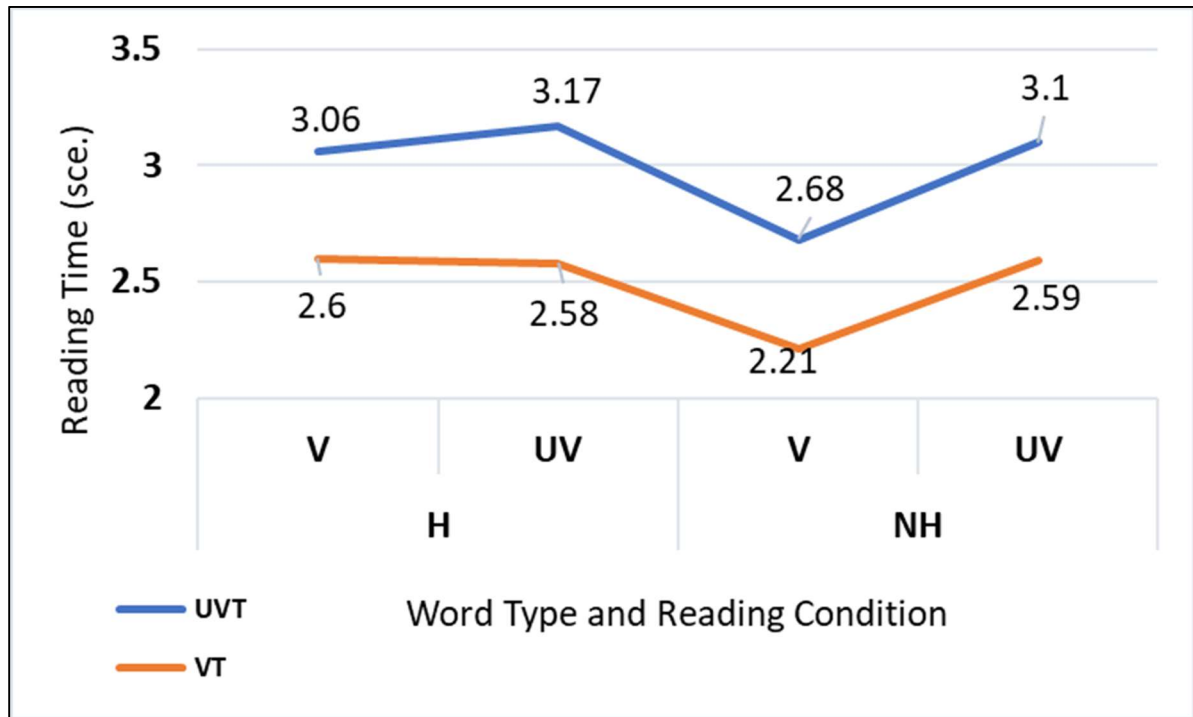
4.2.1.2   Intermediate Level

Similarly, a significant difference was found between UVT and VT groups in terms of reading speed (Table 4.6). The results in table 4.5 show that the intermediate VT group was faster than its UVT counterpart under both V and UV conditions. Moreover, as shown in Table 4.6, statistically significant differences were found in general between both conditions in terms of reading speed, as learners in both intermediate groups took longer to read V words than UV words; however, it appears that this difference between V and UV was smaller in VT group than UVT group (see Table 4.5). Furthermore, the results reveal a statistically significant interaction between groups and conditions, (Table

4.6). Both groups read V words slower than UV; however, UVT group was slower in reading in V and UV conditions than VT group. (Figure 4.3)

Table 4.5 Means of reading time of isolated words: intermediate level

Group	Condition	Mean	95% Confidence Interval	
			Lower Bound	**Upper Bound**
UVT	VOWELIZED	2.868	2.617	3.119
	UNVOWELIZED	2.480	2.229	2.731
VT	VOWELIZED	2.140	1.889	2.390
	UNVOWELIZED	2.007	1.756	2.257

Table 4.6 Reading time of isolated words - tests of effects: intermediate level

Source	Numerator df	Denominator df	F	Sig.
Group	1	18	13.965	.002
Condition	1	18	19.547	.000
Group * Condition	1	18	4.696	.044

Figure 4.3 Reading time of isolated words: intermediate level
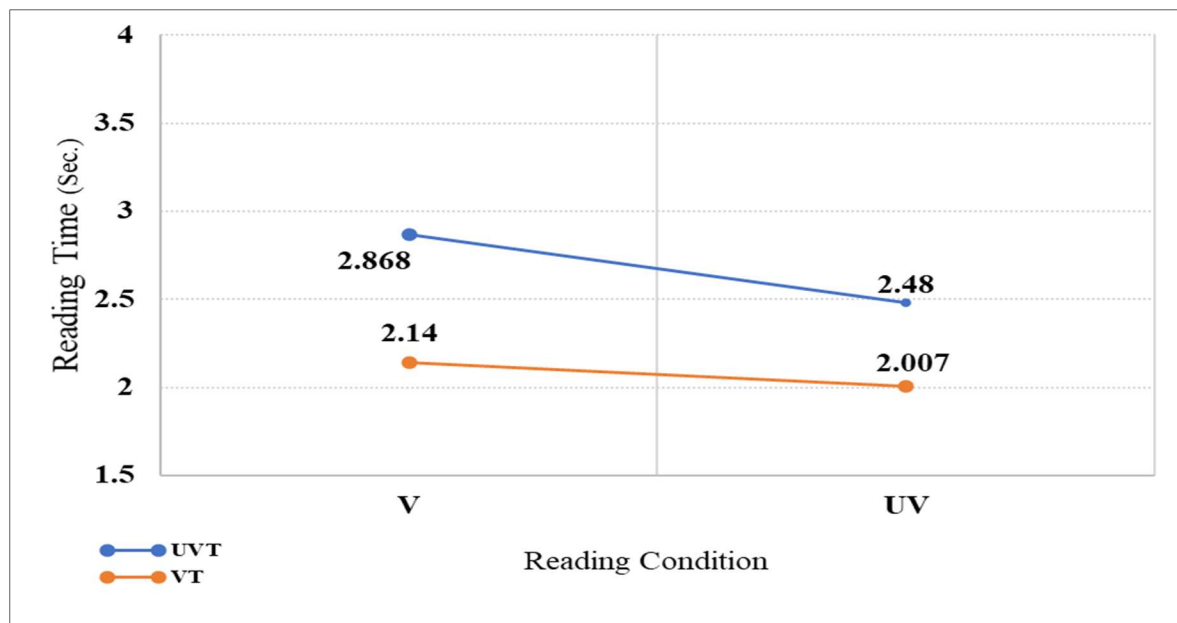
In terms of the reading speed of H words, a statically significant difference was found between UVT group and VT group (see Table 4.7 and Figure 4.2). The results reveal that the intermediate VT group was faster than its UVT group in reading both V-H and UV-H words. However, no significant differences were found in terms of conditions; both groups were faster when reading UV-H than when reading V-H. Furthermore, no significant interaction was found between groups and conditions of H words.

Table 4.7 Tests of fixed effects (homographic words): intermediate level

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	18	13.427	.002
CONDITION	1	18	2.992	.101
GROUP * CONDITION	1	18	.030	.865
a. Dependent Variable: H.				

In terms of NH words, a statically significant difference was found between groups, indicating that the intermediate VT group was faster than the UVT group in reading NH under both V and UV conditions (see Table 4.8 and Figure 4.4). Furthermore, no significant interaction was found between groups and conditions for NH words.

Table 4.8 Tests of fixed effects (non-homographic words): intermediate level

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	18	13.445	.002
CONDITION	1	18	.288	.598
GROUP * CONDITION	1	18	1.331	.264
a. Dependent Variable: NH.				

Figure 4.4 Reading time of H-NH words: intermediate level
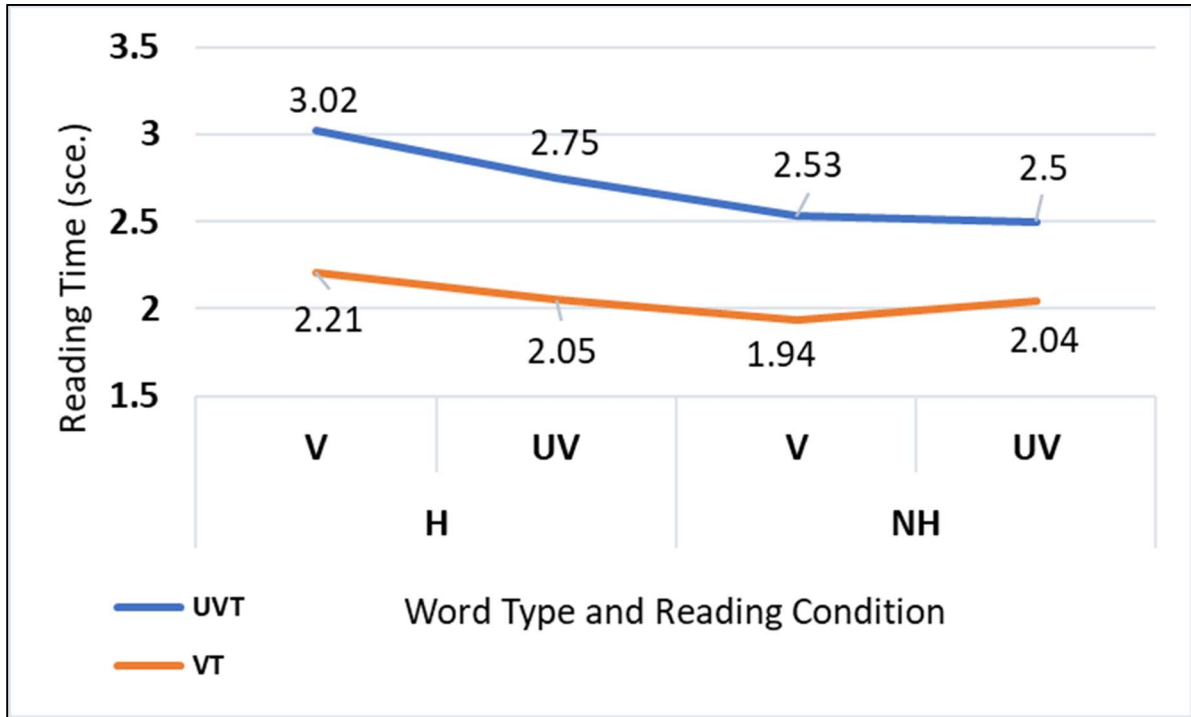
4.2.1.3 Advanced Level

In general, the results of the performance of the advanced groups reveal that the reading speed of isolated words was significantly different between the two groups as well (Table 4.10). The advanced VT group was significantly faster than their UVT counterpart group under V and UV conditions (Table 4.9). Further, in general a significant difference was found between the words under V and UV conditions. In both groups, word reading speed under V was slower than that under UV (Table 4.9).

However, the difference between the two conditions was slightly smaller in VT and more obvious in UVT group (see Table 4.9 and Figure 4.5). In addition, the results

show a near significant interaction between groups and conditions. This indicates that the difference in the reading speeds of V words and UV words in UVT was more obvious than that under same conditions in VT (see Figure 4.5).

Table 4.9 Means of reading time of isolated words: advanced level

Group	Condition	Mean	95% Confidence Interval	
			Lower Bound	Upper Bound
UVT	VOWELIZED	2.931	2.457	3.404
	UN-VOWELIZED	2.561	2.087	3.035
VT	VOWELIZED	2.081	1.607	2.555
	UN-VOWELIZED	1.957	1.483	2.430

Table 4.10 Reading time of isolated words -tests of effects: advanced level

Source	Numerator df	Denominator df	F	Sig.
Group	1	8	6.334	.036
Condition	1	8	20.464	.002
Group * Condition	1	8	5.026	.055

Figure 4.5 Reading time of isolated words: advanced level
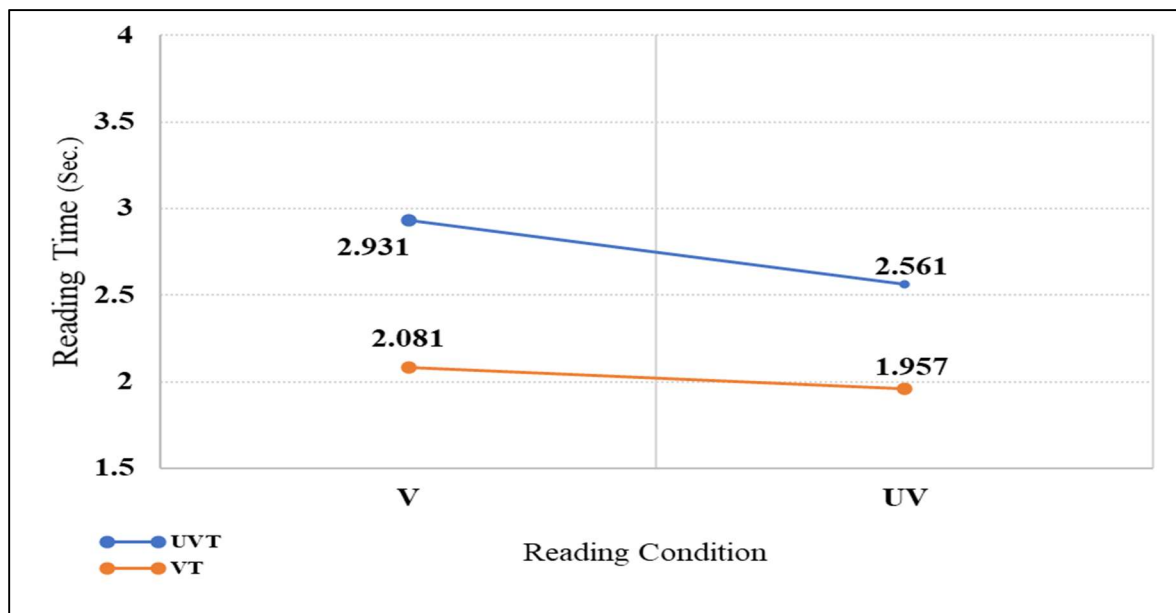
In this level, no significant difference was found between groups in terms of word reading speed of H words and no significant interaction was found between groups and conditions in terms of reading H words in this level. However, a significant difference was found between V-H and UV-H (see also Table 4.11). As shown in Figure 4.6, both groups read UV-H significantly faster than V-H (Table 4.11).

Table 4.11 Tests of fixed effects (homographic words): advanced level

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	8	3.665	.092
CONDITION	1	8	213.269	.000
GROUP * CONDITION	1	8	2.166	.179
a. Dependent Variable: H.				

Similarly, no significant difference was found between groups in terms of the reading speed of NH words and no significant interaction was found between groups and conditions in this level in terms of NH. However, as shown in Figure 4.6, reading V-NH took longer than reading UV-NH in both UVT and VT groups, but the VT group seems to be maintained an advantage of reading speed over their UVT counterparts in both V and UV conditions. a significant difference was found between V-NH and UV-NH in reading H words (Table 4.12). To conclude this section, Figures 4.7-4.8 illustrate a summary of reading speed at three proficiency levels.

Table 4.12 Tests of fixed effects (non-homographic words): Advanced level

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	8	2.831	.131
CONDITION	1	8	63.577	.000
GROUP * CONDITION	1	8	.691	.430

Figure 4.6 Reading time of H-NH words: advanced level
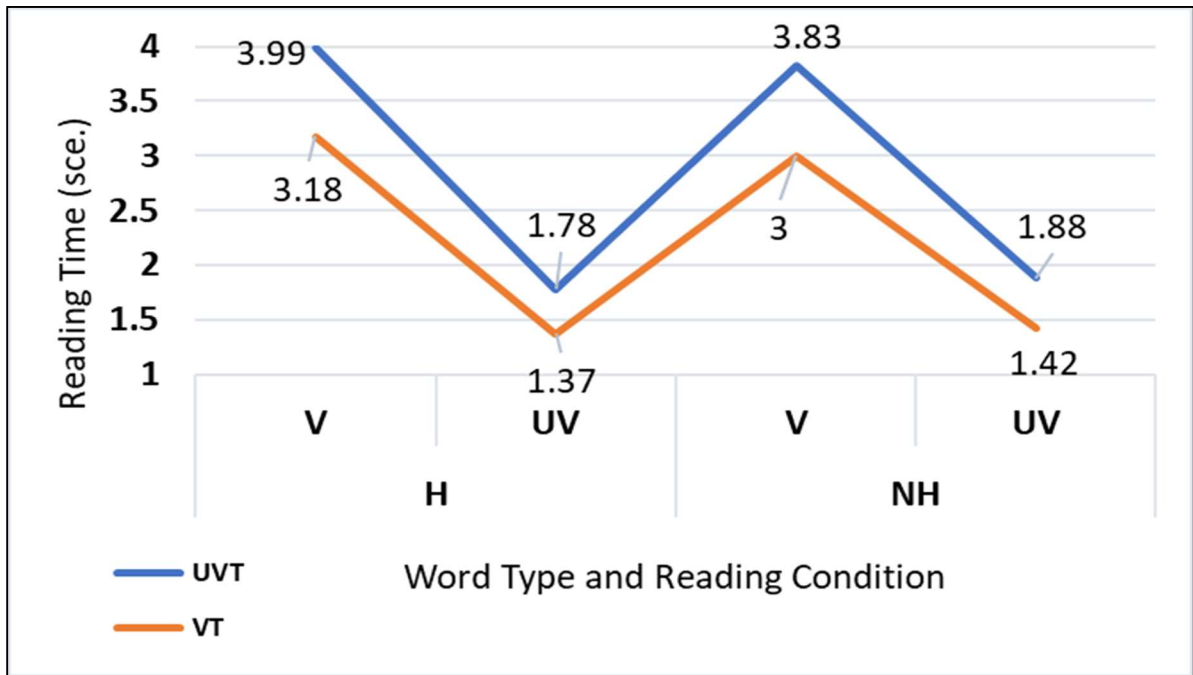
Figure 4.7 Reading time of isolated words at three proficiency levels
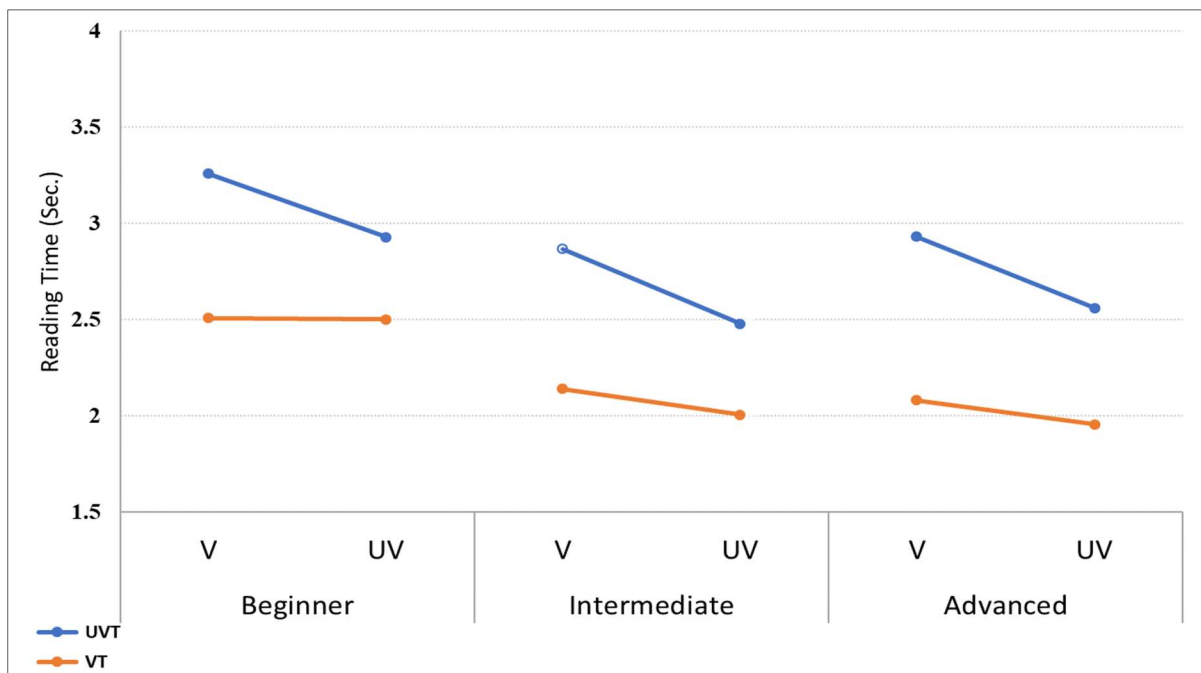
Figure 4.8 Reading time of isolated words (H – NH) words at three proficiency levels
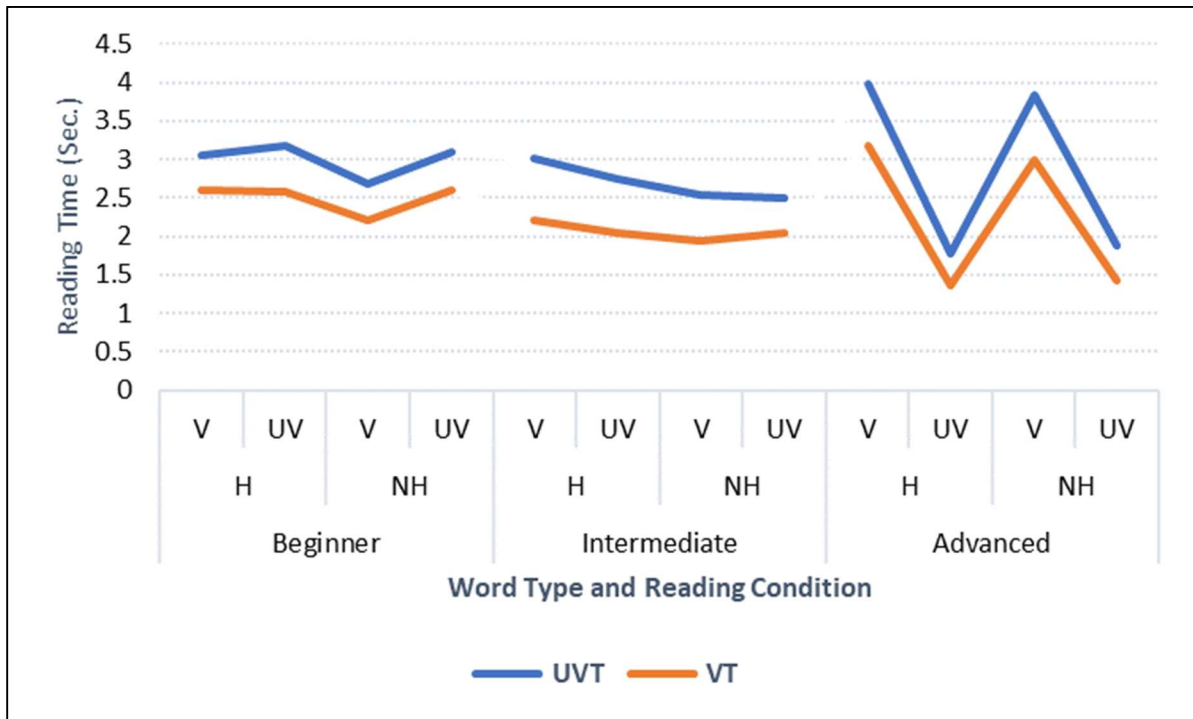
4.2.2   Results of Words Reading Accuracy:

The recognition accuracy in this task was measured by the pronunciation of each word according to two main scales, namely a general scale and a detailed scale.

a) General Scale

The scale used the following criteria: correct pronunciation of the word = 1 point, incorrect pronunciation = 0 points, and incorrect followed by correct pronunciation (i.e.,hesitation) = 0.5 points. For example, the word مُعْظَم *muʕzʕam* "most of", based on learners knowledge, it is a non-homographic word; so if the answer is مُعْظَم *muʕzʕam* "most of" participants will obtain 1 point, if there is any error such as مُعْظِم *muʕzʕim* participants will obtain 0 point; if participants pronounced it

مُعْظِم *muʕzʕim* then corrected themselves and pronounced it مُعْظَم *muʕzʕam* "most of" they will obtain. 0.5 point.

b. Detailed Scale

To provide more specific and accurate results, a detailed scale was employed. In this scale, each word was divided into many parts. The last character of each word was excluded, as this usually represents the case marker in Arabic. Then, the numbers of correct and incorrect parts in each word were calculated. Finally, the word accuracy percentage was measured using the following equation:

(Number of characters in the word – 1) – (Total number of character errors) X 100
(Total numbers of characters in the word – 1)

For example, the word يَبْلُغ *yabluɣ* "reaches" has three parts, namely ي [ya], بْ [b], and لُ [lu], the last part, غ [ɣ] was not calculated because it represents the case ending, and not the internal diacritics. Thus, the scale of this word is 3. Accordingly, if the participants pronounced this word with a pronunciation error in one character, such as يَبْلِغ *yabliɣ* the accuracy of this word in the detailed scale would be 66.66%. (Figure 3.16 in chapter 3).

4.2.2.1 Beginner Level

4.2.2.1.1 General Scale

In general, the results obtained from the analysis show no significant differences between groups nor conditions in terms of the accuracy of isolated word recognition. Table 4.13

and Figure 4.9 present the means of the word reading accuracy in the beginner level under both conditions, V and UV. These values show a significant interaction between groups and conditions (Table 4.14). V seems to assist VT group readers in terms of recognizing isolated words more accurately. By contrast, UVT group seemed to encounter difficulties in terms of accuracy when reading isolated words under the V condition (Table 4.13, Figure 4.9).

Table 4.13 Means of reading accuracy of isolated words: beginner level (general scale)

GROUP	CONDITION	Mean	95% Confidence Interval	
			Lower Bound	**Upper Bound**
UVT	VOWELIZED	64.951	57.025	72.877
	UNVOWELIZED	80.882	72.956	88.809
VT	VOWELIZED	82.598	74.672	90.525
	UNVOWELIZED	77.696	69.770	85.623

Table 4.14 Reading accuracy of isolated words - tests of effects: beginner level (general scale)

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	22	2.309	.143
CONDITION	1	22	3.854	.062
GROUP * CONDITION	1	22	13.752	.001

Figure 4.9 Reading accuracy of isolated words: beginner level (general scale)
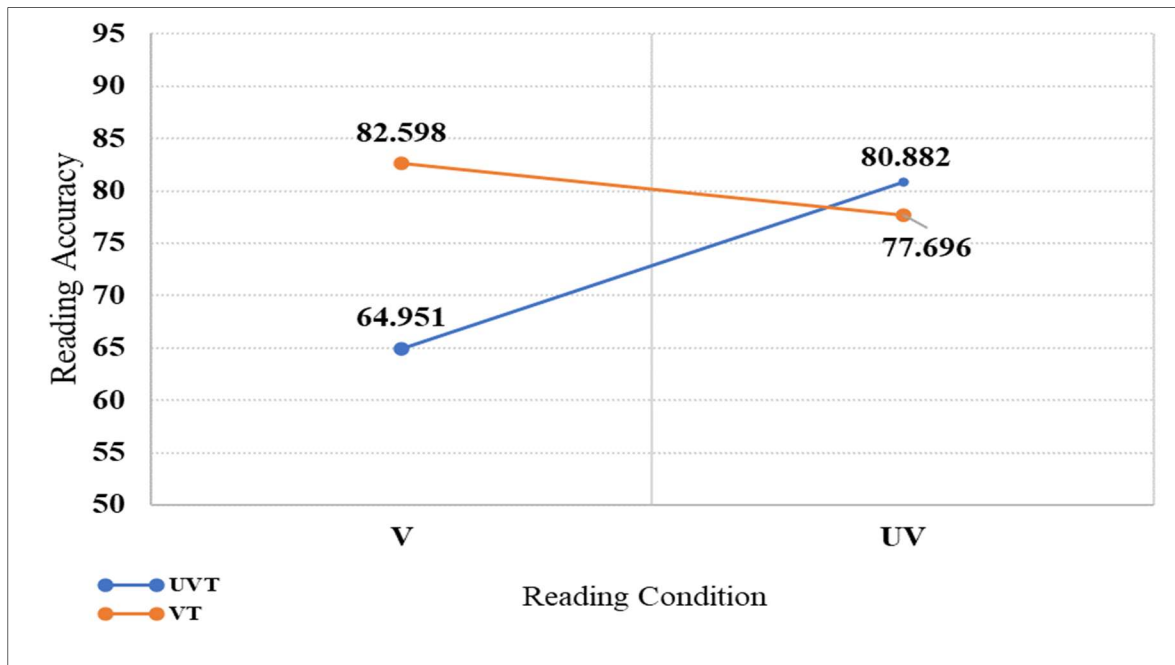
As for accuracy of reading H words alone, the results show a significant-between group difference. Table 4.15 shows that the VT beginner group readers were significantly more accurate than their counterpart UVT learners when reading V-H words. By contrast, participants in UVT beginner group were only slightly more accurate when reading UV-H words but the difference was not statistically significant (see Table 4.15 and Figure 4.10). Moreover, a significant interaction was found between groups and conditions in terms of H words (Table 4.15). This interaction shown in Figure 4.10 means that UVT and VT recognized UV-H words almost equally, with UVT group recognizing words slightly more accurately, but a bigger difference was found between groups in terms of recognizing V-H words, which indicates that VT group was more accurate than UVT group. Interestingly, VT group recognized H words in terms of accuracy at almost the

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exact same rate under both V and UV conditions, while UVT group faced some

difficulties in recognizing H words under condition V (Figure 4.10).

Table 4.15 Reading accuracy -tests of fixed effects (homographic words): beginner level

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	22	6.424	.019
CONDITION	1	22	12.658	.002
GROUP * CONDITION	1	22	17.787	.000
a. Dependent Variable: H.				

Regarding NH words, no significant differences were found between groups nor

conditions and no significant interaction was found between groups and conditions.

Overall, the accuracy findings based on word type (H or NH) and condition (V or UV)

are as follows:

VT group was more able to accurately recognize words under both V and UV

conditions with almost the same high level of accuracy. While UVT group's results

differed based on word type and conditions, UVT group seemed to encounter difficulties

in terms of accuracy when the conditions and the type of word changed. This group

obtained the lowest level of accuracy when they read V-H then V-NH (Figure 4.10).

Table 4.16 Reading accuracy -tests of fixed effects (non-homographic words): beginner level

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	22	3.225	.086
CONDITION	1	22	.776	.388
GROUP * CONDITION	1	22	3.348	.081
a. Dependent Variable: NH.				

Figure 4.10 Reading accuracy of H-NH words: beginner level
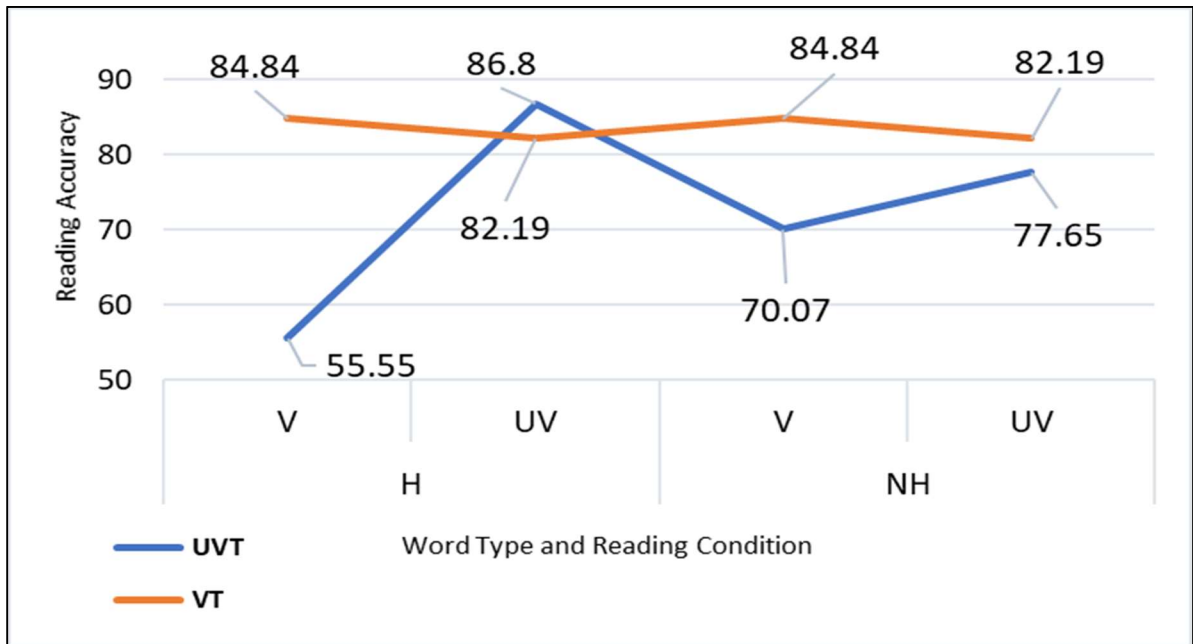
Detailed Scale

Results of detailed scale analysis showed a near-significant difference between the reading accuracy of participants in the UVT and VT groups (Table 4.18). The means of the two groups showed that participants in the VT group were more accurate than those in the UVT group under both V and UV conditions (Table 4.17). Furthermore, a significant difference was observed between the participants in these groups with respect to reading accuracy under V and UV conditions (Table 4.18). This difference may be because of the lower average accuracy of participants in the UVT group for V words than for UV words. The average word accuracy of participants in the VT group was almost the same under both V and UV conditions. This resulted in a significant interaction between the groups and conditions (Table 4.18 and Figure 4.11).

Table 4.17 Means of reading accuracy of isolated words: beginner level (detailed scale)

GROUP		Mean	95% Confidence Interval	
			Lower Bound	Upper Bound
UVT	VOWELIZED	78.554	73.587	83.521
	UNVOWELIZED	87.663	82.697	92.630
VT	VOWELIZED	88.971	84.004	93.937
	UNVOWELIZED	89.951	84.984	94.918

Table 4.18 Reading accuracy of isolated words - tests of effects: beginner level (detailed scale)

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	22	4.205	0.052
CONDITION	1	22	11.094	0.003
GROUP * CONDITION	1	22	7.201	0.014

Figure 4.11 Reading accuracy of isolated words: beginner level (detailed scale)
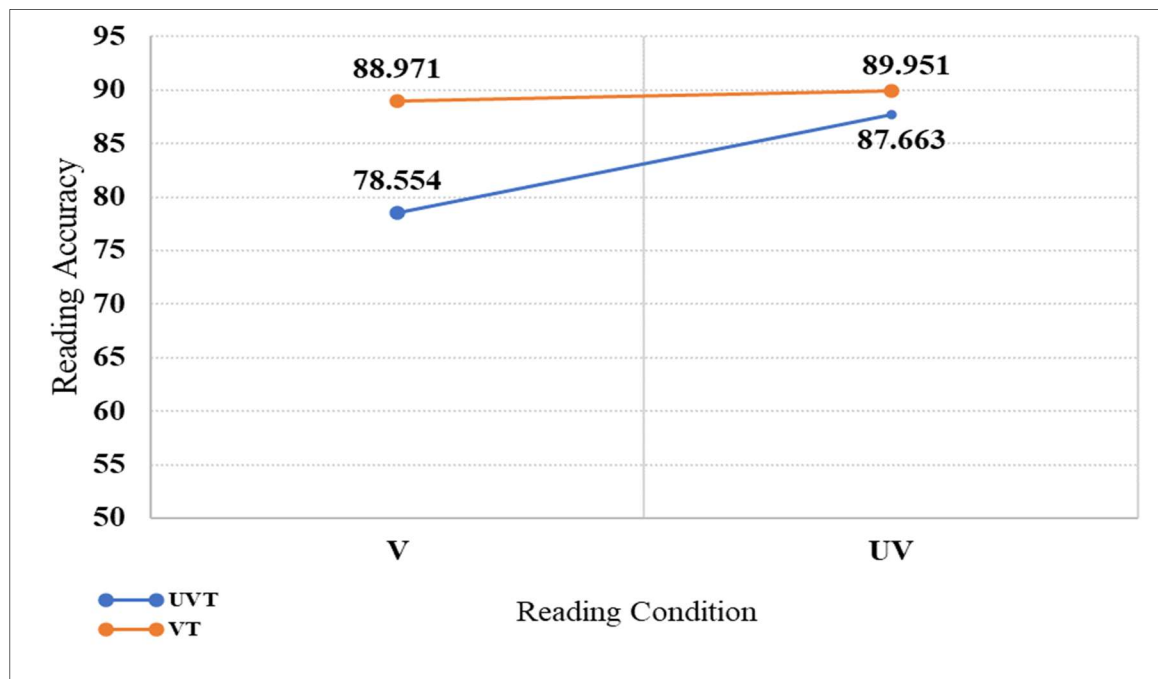
4.2.2.2   Intermediate Level

4.2.2.2.1   General Scale

In Level 2, generally, a near significant difference was found between UVT group and VT group in terms of word reading accuracy (Table 4.20). The means of the two groups show that VT group was more accurate than UVT group under both V and UV conditions (Table 4.19). However, no significant difference was found between V and UV conditions in terms of word reading accuracy in intermediate level. By contrast, there was a near significant interaction between groups and conditions (Table 4.20) which indicates that UVT group's performance almost equal under both V and UV conditions, while the VT group's performance increased considerably in recognizing V words (Figure 4.12). However, VT group seems to be maintaining an advantage of reading accuracy over their UVT counterparts in both V and UV conditions.

Table 4.19 Means of reading accuracy of isolated words: intermediate level (general scale)

Group	Condition	Mean	95% Confidence Interval	
			Lower Bound	**Upper Bound**
UVT	VOWELIZED	65.278	56.081	74.475
	UNVOWELIZED	66.111	56.914	75.308
VT	VOWELIZED	83.333	74.137	92.530
	UNVOWELIZED	71.111	61.914	80.308

Table 4.20 Reading accuracy of isolated words-tests of effects: intermediate level (general scale)

Source	Numerator df	Denominator df	F	Sig.
Group	1	18	4.371	.051
Condition	1	18	3.243	.089
Group * Condition	1	18	4.262	.054

Figure 4.12 Reading accuracy of isolated words: intermediate level (general scale)
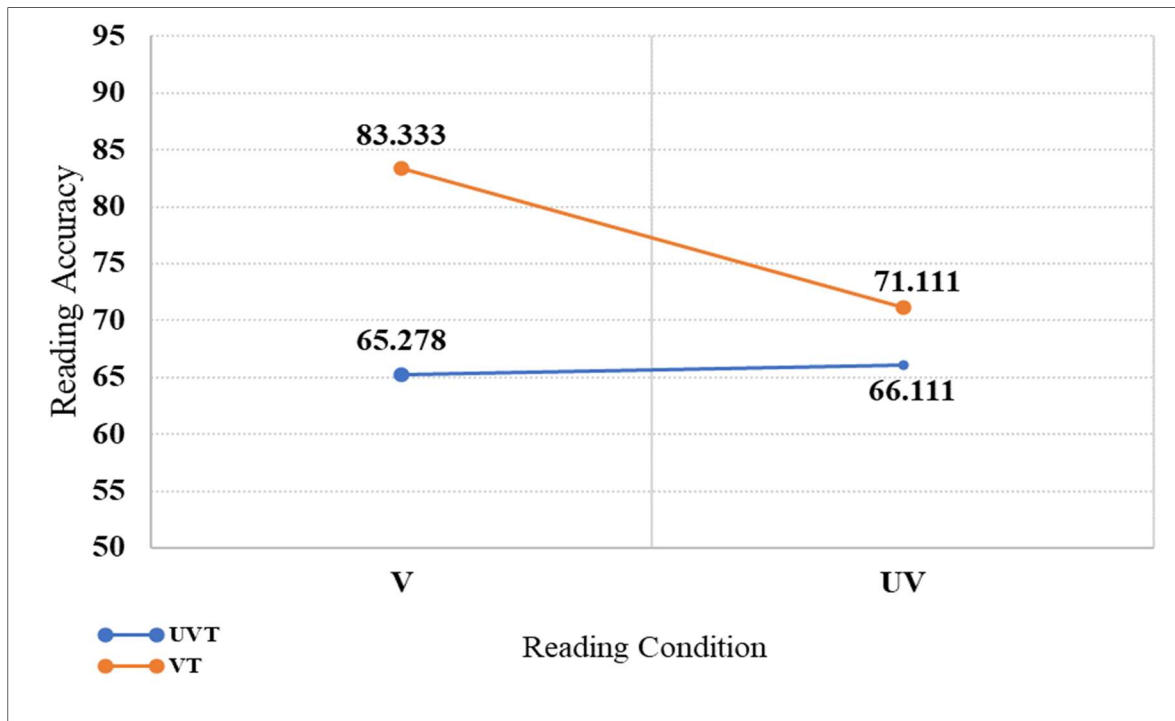
No significant difference was found between groups nor conditions in accurately reading H words in in the intermediate level. Furthermore, no significant interaction was found between groups and conditions in terms of the accuracy of H word reading. However, a significant difference was found between V-NH and UV-NH in terms of reading NH words (Table 4.22). Figure 4.13 indicates that both groups recognized V-NH more accurately than UV-NH. This advantage of recognizing V-NH more accurately under the V condition was more obvious in VT (Figure 4.13).

Table 4.21 Reading accuracy -tests of fixed effects (homographic words): intermediate level

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	18	3.468	.079
CONDITION	1	18	1.073	.314
GROUP * CONDITION	1	18	3.701	.070
a. Dependent Variable: H.				

Table 4.22 Reading accuracy -tests of fixed effects (non-homographic words): intermediate level

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	18	1.960	.179
CONDITION	1	18	4.737	.043
GROUP * CONDITION	1	18	2.866	.108
a. Dependent Variable: NH.				

Figure 4.13 Reading accuracy of H-NH words: intermediate level
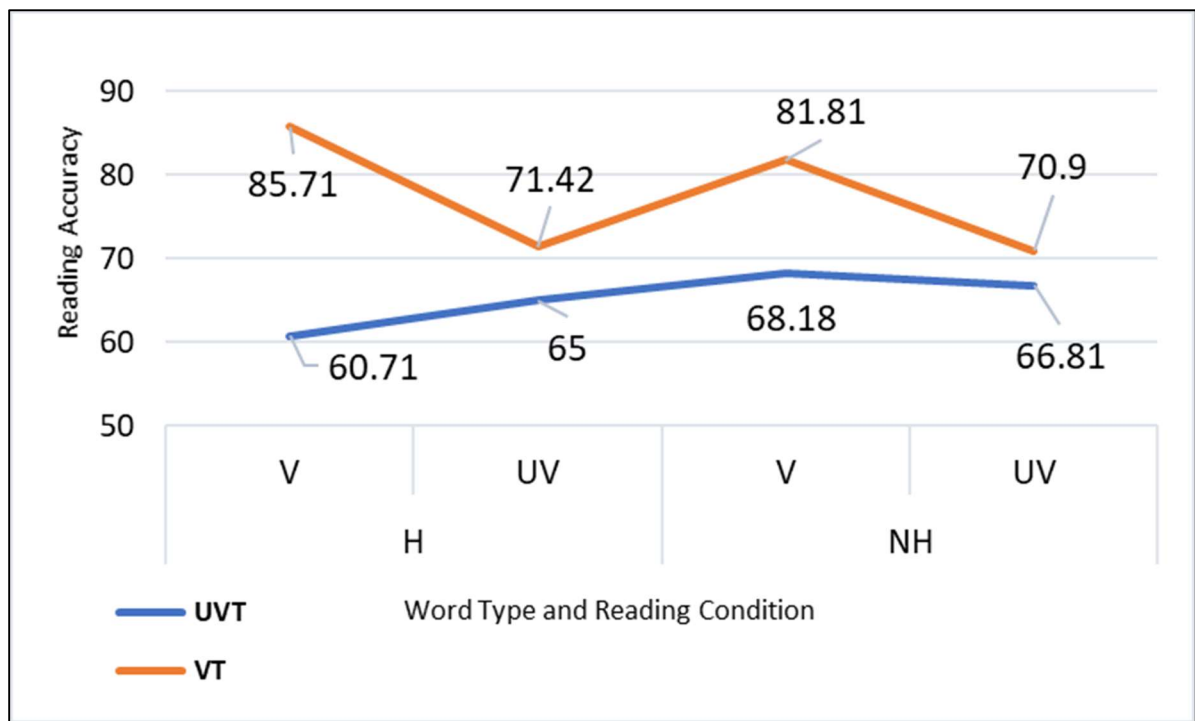
4.2.2.2.2   Detailed scale

Results of the detailed scale analysis showed a near significant difference in word accuracy between participants in intermediate UVT group and those in intermediate VT group (Table 4.24). The means shown in Table 4.23 indicate that participants in the VT group were significantly more accurate than those in the UVT group under both V and UV conditions. Moreover, a significant difference was observed between the participants in these groups with respect to reading accuracy under V and UV conditions (Table 4.24). Evidently, participants in the VT group read V words marginally more accurately than UV words. However, the accuracy of participants in the UVT group for reading V words decreased noticeably. This led to a significant interaction between the groups and conditions (Table 4.24 and Figure 4.14).

Table 4.23 Means of reading accuracy of isolated words: intermediate level (detailed scale)

GROUP		Mean	95% Confidence Interval	
			Lower Bound	Upper Bound
UVT	VOWELIZED	77.731	72.462	83.001
	UNVOWELIZED	82.255	76.986	87.524
VT	VOWELIZED	87.431	82.161	92.700
	UNVOWELIZED	86.985	81.716	92.254

Table 4.24 Reading accuracy of isolated words-tests of effects: intermediate level (detailed scale)

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	18.000	4.340	0.052
CONDITION	1	18.000	5.196	0.035
GROUP * CONDITION	1	18.000	7.713	0.012

Figure 4.14 Reading accuracy of isolated words: intermediate level (detailed scale)
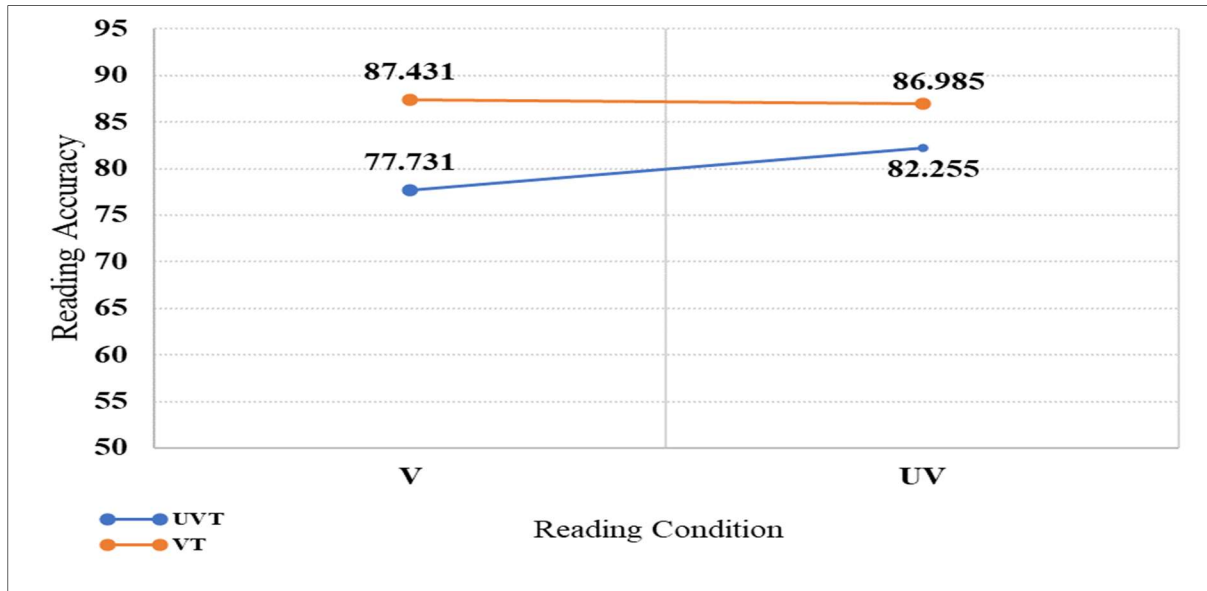
4.2.2.3 Advanced Level

4.2.2.3.1 General Scale

Overall, at the advanced level, no significant differences were found between groups nor conditions. Moreover, no significant interaction was found between groups and conditions. The means show that VT was more accurate than UVT, and both groups read words more accurately under the V condition but in both conditions VT group seems to be maintaining an advantage over UVT group (see Table 4.25, Figure 4.15).

Table 4.25 Means of reading accuracy of isolated words: advanced level (general scale)

Group	Condition	Mean	95% Confidence Interval	
			Lower Bound	**Upper Bound**
UVT	VOWELIZED	71.818	62.311	81.326
	UNVOWELIZED	67.727	58.220	77.235
VT	VOWELIZED	75.455	65.947	84.962
	UNVOWELIZED	73.636	64.129	83.144

Table 4.26 Reading accuracy of isolated words-tests of effects: advanced level (general scale)

Source	Numerator df	Denominator df	F	Sig.
Group	1	8	.753	.411
Condition	1	8	1.130	.319
Group * Condition	1	8	.167	.693

Figure 4.15 Reading accuracy of isolated words: advanced level (general scale)
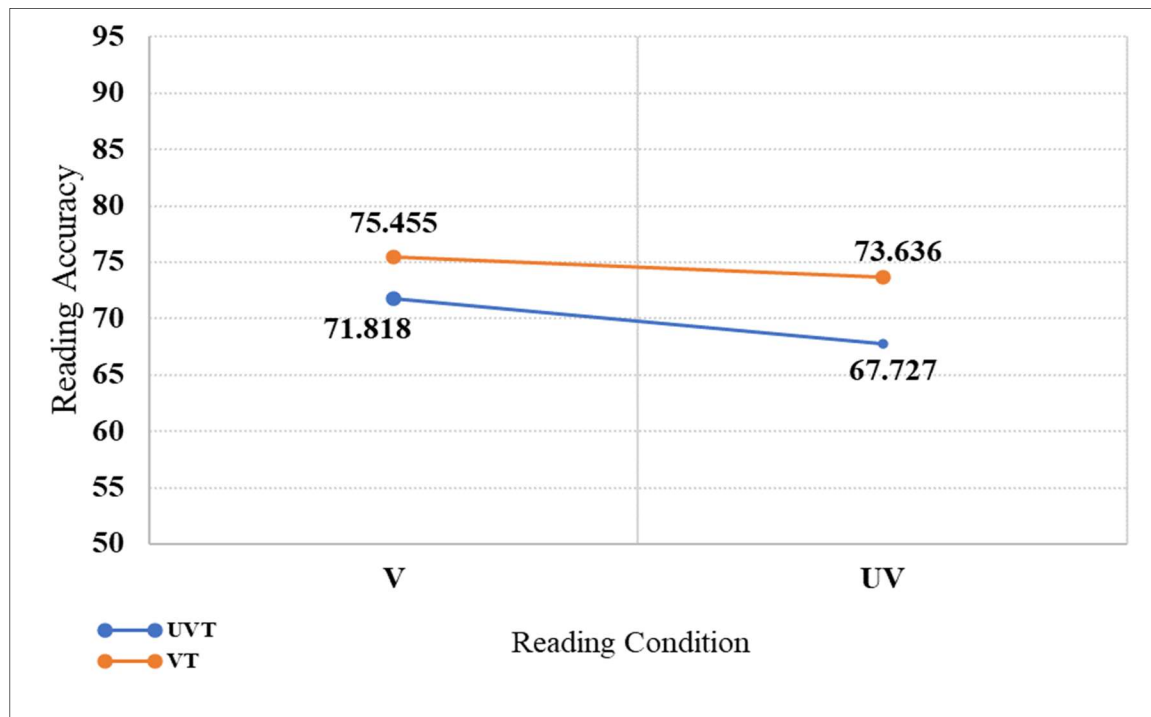
Similarly, in terms of H and NH words, no significant differences were found between groups nor conditions; furthermore, no significant interaction was found between groups and conditions in H nor NH words (Tables 4.27 and 4.28). However, the means show that VT maintained an advantage in accuracy over UVT group. Figure 4.16 illustrates the stability of VT group's results (i.e., no wobbling) and the variability in UVT group's results (i.e., clear wobbling).

Table 4.27 Reading accuracy -tests of fixed effects (homographic words): advanced level

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	8	1.034	.339
CONDITION	1	8	.046	.836
GROUP * CONDITION	1	8	.183	.680
a. Dependent Variable: H.				

Table 4.28 Reading accuracy -tests of fixed effects (non-homographic words): advanced level

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	8	.239	.638
CONDITION	1	8	2.632	.143
GROUP * CONDITION	1	8	.947	.359
a. Dependent Variable: NH.				

Figure 4.16 Reading accuracy of H-NH words: advanced level
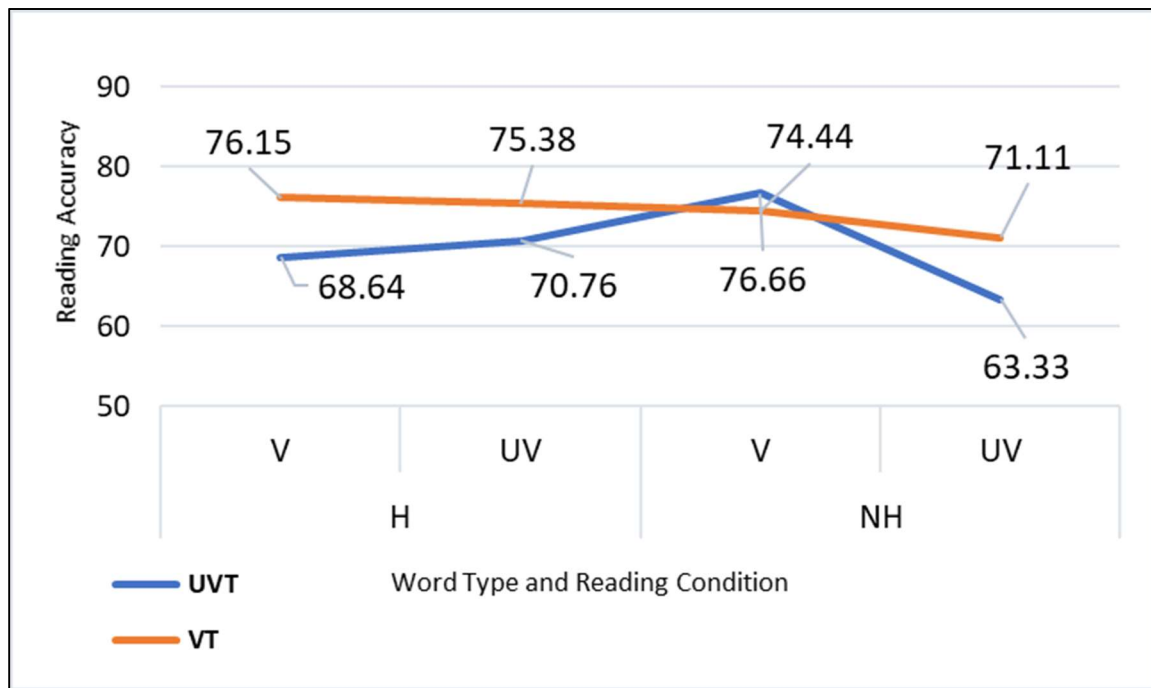
4.2.2.3.2   Detailed Scale

In the advanced level, results of the detailed scale analysis showed a significant difference in reading accuracy under V and UV conditions. However, no significant difference was observed between participants in the UVT and VT groups and no significant interaction was observed between the groups and conditions with respect to word reading accuracy (Table 4.30). However, the means shown in Table 4.30 indicated that participants in the advanced VT group showed better word reading accuracy than those in the UVT group under both V and UV conditions which means the VT group seem to maintain advantage over the UVT group (Table 4.29 and Figure 4.17). To conclude this section, Figures 4.18-4.20 illustrate a summary of reading accuracy of isolated words at three proficiency levels.

Table 4.29 Means of reading accuracy of isolated words: advanced level (detailed scale)

GROUP		Mean	95% Confidence Interval	
			Lower Bound	Upper Bound
UVT	VOWELIZED	87.045	81.433	92.658
	UNVOWELIZED	86.009	80.396	91.621
VT	VOWELIZED	89.564	83.952	95.177
	UNVOWELIZED	88.882	83.269	94.494

Table 4.30 Reading accuracy of isolated words-tests of effects: advanced level (detailed scale)

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	8.000	0.615	0.455
CONDITION	1	8.000	7.264	0.027
GROUP * CONDITION	1	8.000	0.308	0.594

Figure 4.17 Reading accuracy of isolated words: advanced level (detailed scale)
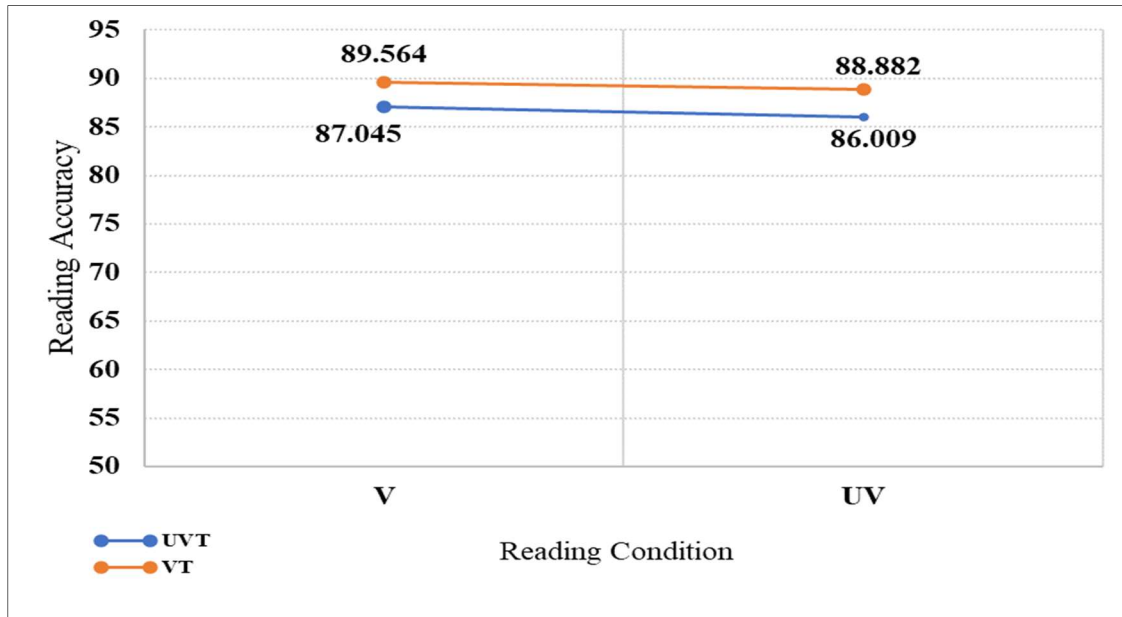
Figure 4.18 Reading accuracy of isolated words at three proficiency levels (general scale)
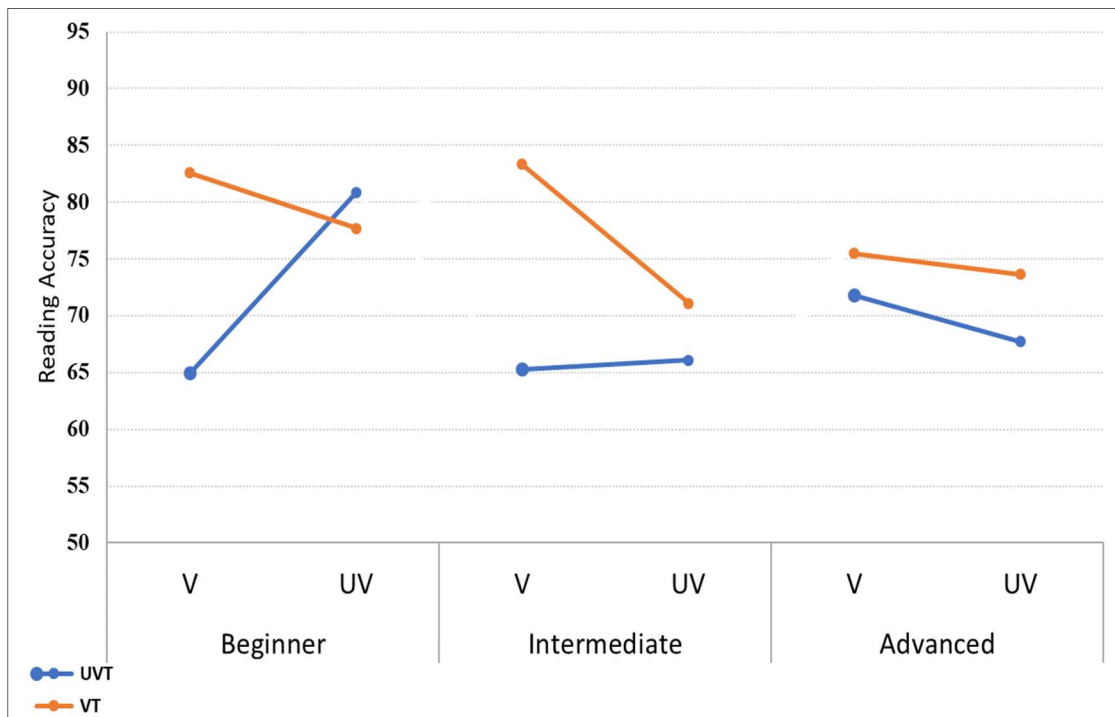
Figure 4.19 Reading accuracy of isolated words at three proficiency levels (detailed scale)
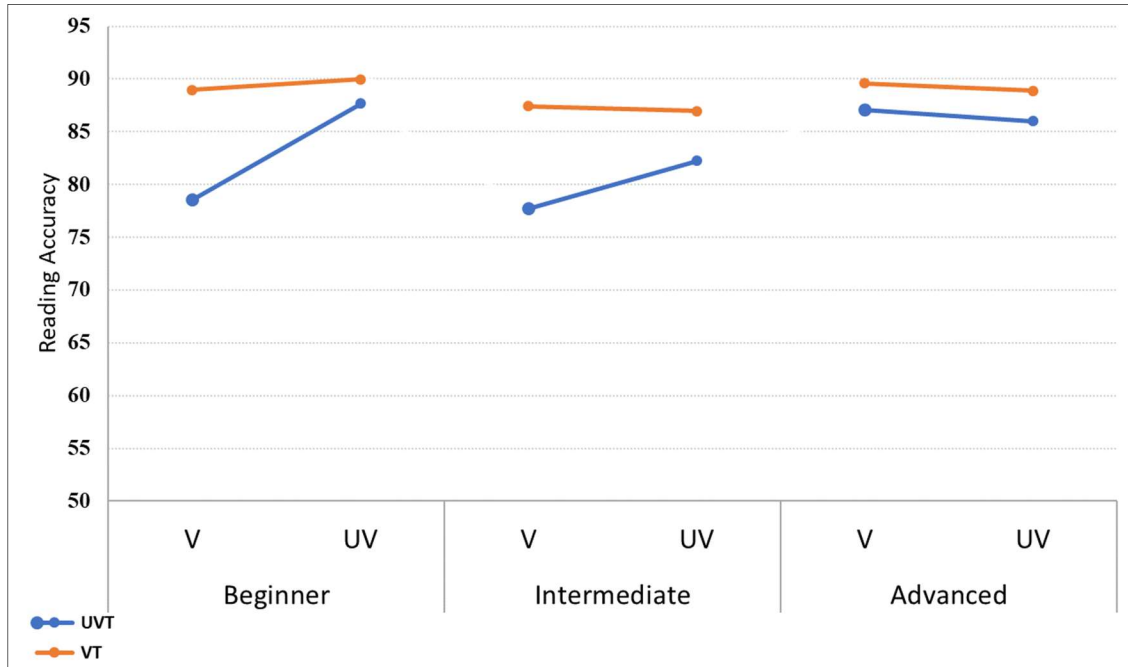
Figure 4.20 Reading accuracy of isolated words (H – NH) at three proficiency levels
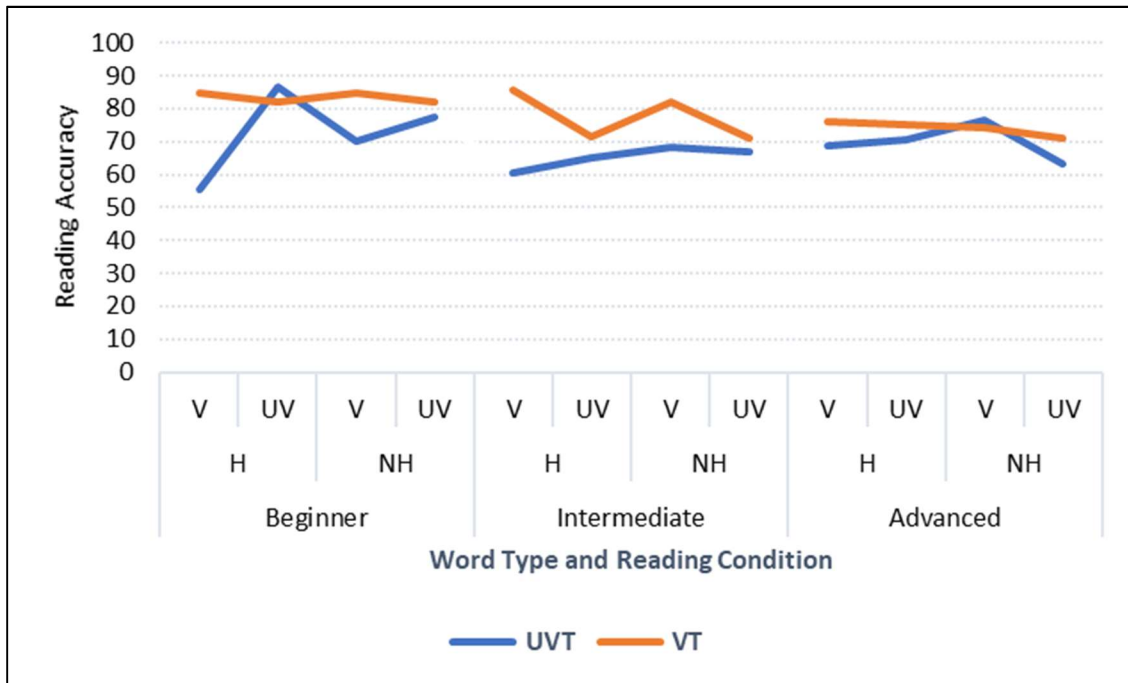
4.3   Results of Text Task:

The aim of text reading task was to measure the recognition of words in both V and UV texts and identify the effect on the reading speed, accuracy, and comprehension of participants in each group in order to answer the second, third, and fourth research questions.

4.3.1   Results of Text Reading Speed

To address the second research question, restated below, each participant was asked to read both V and UV texts aloud.

> **RQ 2**. Do diacritics play a role in the reading speed of learners who rely on V
> textbooks versus those who rely on UV textbooks at different stages of Arabic
> L2 acquisition?

Each reading was recorded and analyzed in PRAAT software, and each participant's reading speed was measured in milliseconds. This was determined from the participant started reading the text until he/she stopped reading. (See Figure 3.16 in methodology chapter). The results of the data related to this topic are reported below.

4.3.1.1   *Beginner Level*

Tables 4.31, 4.32 show that the beginner VT group was significantly faster than the UVT group when reading texts under both V and UV conditions. The results also show a significant difference between reading the V and UV texts, in that reading the V text took longer than reading the UV text by both UVT and VT groups (Table 4.31). Furthermore, the results show a significant interaction between groups and conditions, which indicates

that although reading the V text took longer than reading UV in both groups, the difference in the reading speed between reading the V and UV texts was more obvious in the UVT group (Figure 4.21).

Table 4.31 Means of reading time of texts: beginner level

Group	Condition	Mean	95% Confidence Interval	
			Lower Bound	**Upper Bound**
UVT	VOWELIZED	335.056	299.942	370.169
	UNVOWELIZED	285.249	250.136	320.363
VT	VOWELIZED	217.996	182.882	253.109
	UNVOWELIZED	198.045	162.932	233.158

Table 4.32 Reading time of texts – tests of effects: beginner level

Source	Numerator df	Denominator df	F	Sig.
Group	1	22	19.474	.000
Condition	1	22	25.488	.000
Group * Condition	1	22	4.669	.042

Figure 4.21 Reading time of text: beginner level
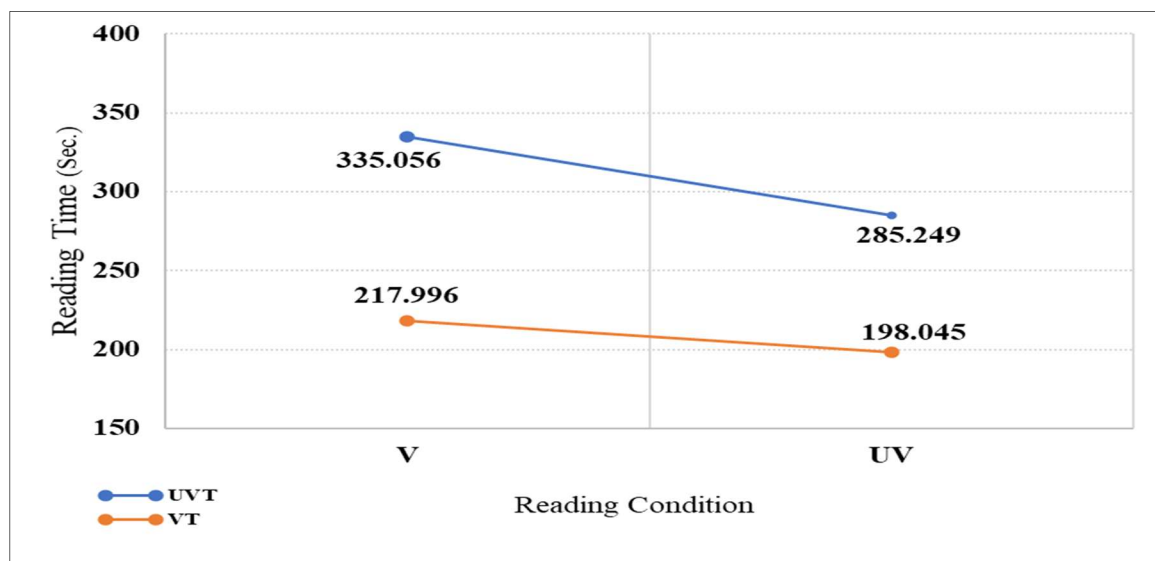
4.3.1.2   Intermediate Level

Similar to the beginner groups, the intermediate groups exhibited a similar a significant difference between UVT and VT groups in terms of reading speed (Table 4.34). The intermediate UVT group was significantly slower than the VT group in reading under both conditions (see Tables 4.33, 4.34). Similarly, in each group, reading was slower under the V condition than reading under the UV condition, and the difference between these conditions is statistically significant (Table 4.34). However, the difference between the reading speed under V and UV conditions was more noticeable in UVT group, which contributed to a significant interaction between groups and conditions (Table 4.34 and Figure 4.22).

Table 4.33 Means of reading time of texts: intermediate level

Group	Condition	Mean	95% Confidence Interval	
			Lower Bound	**Upper Bound**
UVT	VOWELIZED	351.846	314.702	388.990
	UNVOWELIZED	310.579	273.435	347.723
VT	VOWELIZED	205.559	168.415	242.703
	UNVOWELIZED	192.334	155.190	229.478

Table 4.34 Reading time of texts – tests of effects: intermediate level

Source	Numerator df	Denominator df	F	Sig.
Group	1	18	29.425	.000
Condition	1	18	17.833	.001
Group * Condition	1	18	4.723	.043

Figure 4.22 Reading time of text: intermediate level
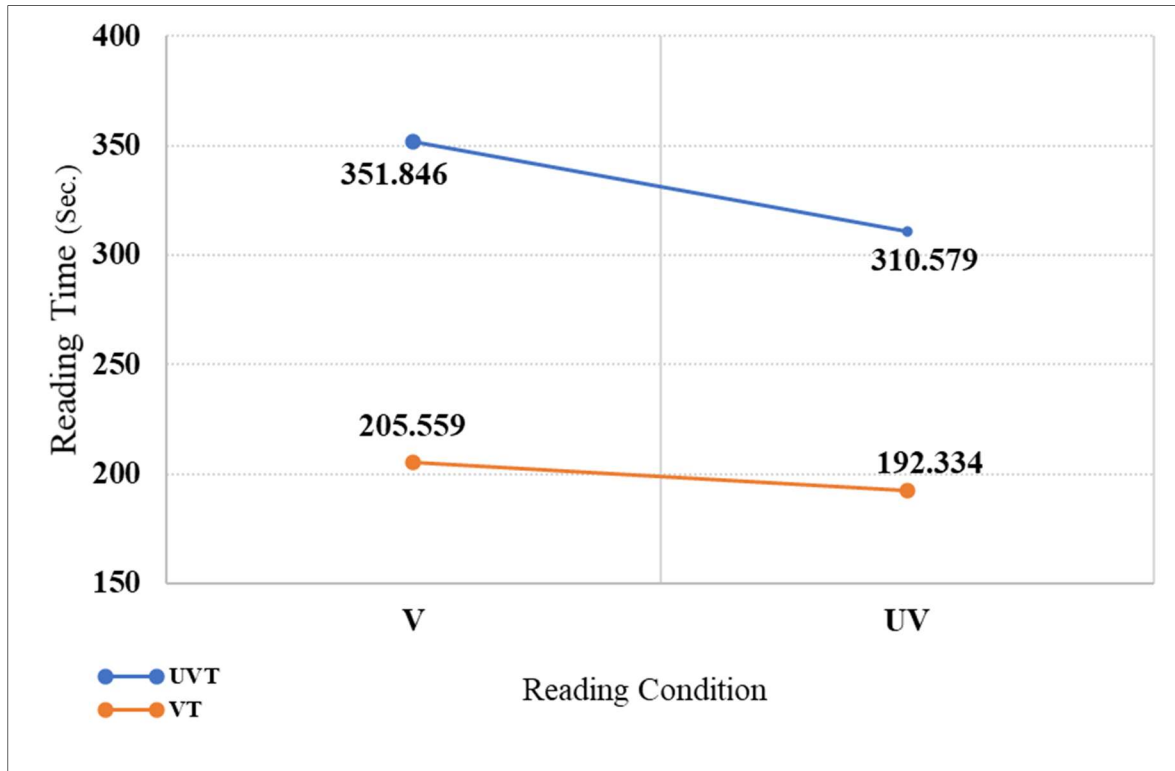
4.3.1.3 Advanced Level

As for the results of the advanced groups, the analysis reveals the VT group was faster

than UVT group in reading under both V and UV conditions, but this difference is not

statistically significant (see Tables 4.35, 4.36). However, there was a significant

difference between reading V and UV, in that both groups read slower under the V

condition than in the UV condition. However, the difference between these conditions is

slight in VT group, whereas it is bigger in UVT group (Table 4.35, Figure 23). In

addition, a significant interaction was found between groups and conditions due to the V

condition, which caused some reading difficulties for UVT group (Figure 4.23). To

conclude this section, Figure 4.24 illustrates a summary of reading speed of texts at three proficiency levels.

Table 4.35 Means of reading time of texts: advanced level

Group	Condition	Mean	95% Confidence Interval	
			Lower Bound	**Upper Bound**
UVT	VOWELIZED	257.820	184.564	331.076
	UNVOWELIZED	226.346	153.090	299.602
VT	VOWELIZED	192.816	119.560	266.072
	UNVOWELIZED	183.576	110.320	256.832

Table 4.36 Reading time of texts – tests of effects: advanced level

Source	Numerator df	Denominator df	F	Sig.
Group	1	8	1.443	.264
Condition	1	8	23.139	.001
Group * Condition	1	8	6.901	.030

Figure 4.23 Reading time of text: advanced level
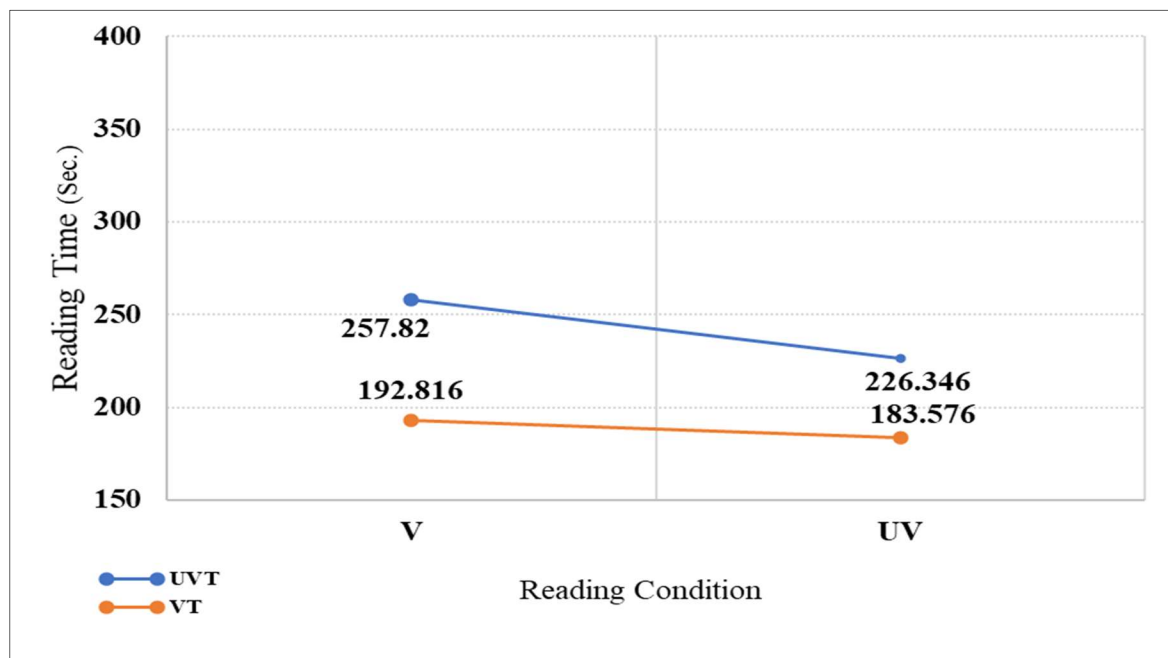
Figure 4.24 Reading time of texts at three proficiency levels
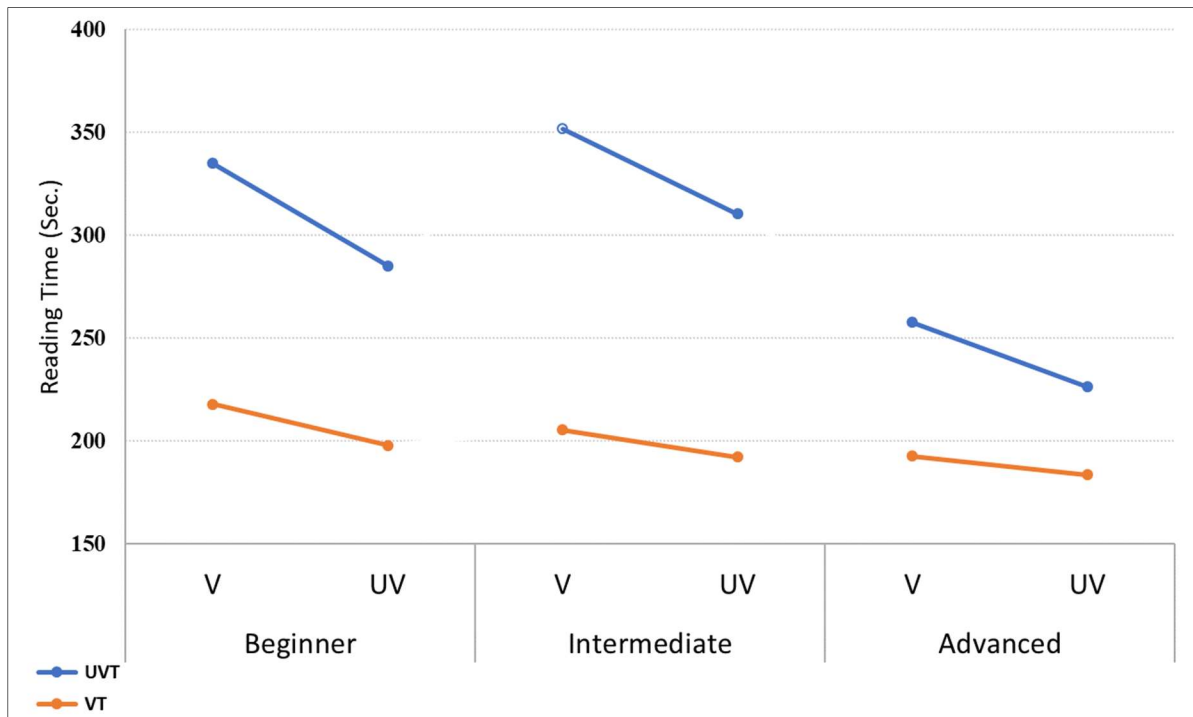
4.3.2 Results of Texts Reading Accuracy

To determine reading accuracy of the two groups of participants, two types of accuracy were considered: target word accuracy and whole text accuracy. Each participant's reading accuracy was measured based on the pronunciation of each word in a whole text according to general scale and in a target words part according to general and detailed scales.

This part of the task is intended to address the third research question restated below:

RQ 3. Do diacritics play a role in reading accuracy for learners who rely on V

textbooks versus those who rely on UV textbooks at different stages of Arabic L2

acquisition?

The results of the data pertaining to this question are reported in the sections

immediately below.

4.3.2.1   Accuracy of Target Words in Text

Recall for chapter 3, each text contains several target words selected from the input that

the participants in both groups have received in their textbooks almost equally. This part

of the task aims to measure the reading accuracy of these words in both V and UV text.

General and detailed scales were used in this part and the results of the data related to the

accuracy of reading target words in context are reported below by proficiency level.

4.3.2.1.1   Beginner Level

4.3.2.1.1.1   General Scale

No significant difference was found between groups in terms of the accuracy of reading

target words under both the V and UV conditions (Table 4.38). Both groups had almost

the same level of accuracy when reading under UV conditions (Table 4.37); however, VT

had an advantage in reading the V text (Table 4.37, Figure 4.25). Moreover, a significant

difference was found between V and UV conditions (Table 4.38), in that reading under

the V condition resulted in more accuracy than reading under the UV condition in both

UVT and VT. No significant interaction was found between groups and conditions.

Table 4.37 Means of reading accuracy of target words: beginner level (general scale)

Group	Condition	Mean	95% Confidence Interval	
			Lower Bound	**Upper Bound**
UVT	VOWELIZED	63.691	55.128	72.253
	UNVOWELIZED	56.251	47.688	64.813
VT	VOWELIZED	72.024	63.462	80.587
	UNVOWELIZED	56.846	48.283	65.408

Table 4.38 Reading accuracy of target words-tests of effects: beginner level

Source	Numerator df	Denominator df	F	Sig.
Group	1	22	.708	.409
Condition	1	22	17.694	.000
Group * Condition	1	22	2.071	.164

Figure 4.25 Reading accuracy of target words: beginner level (general scale)
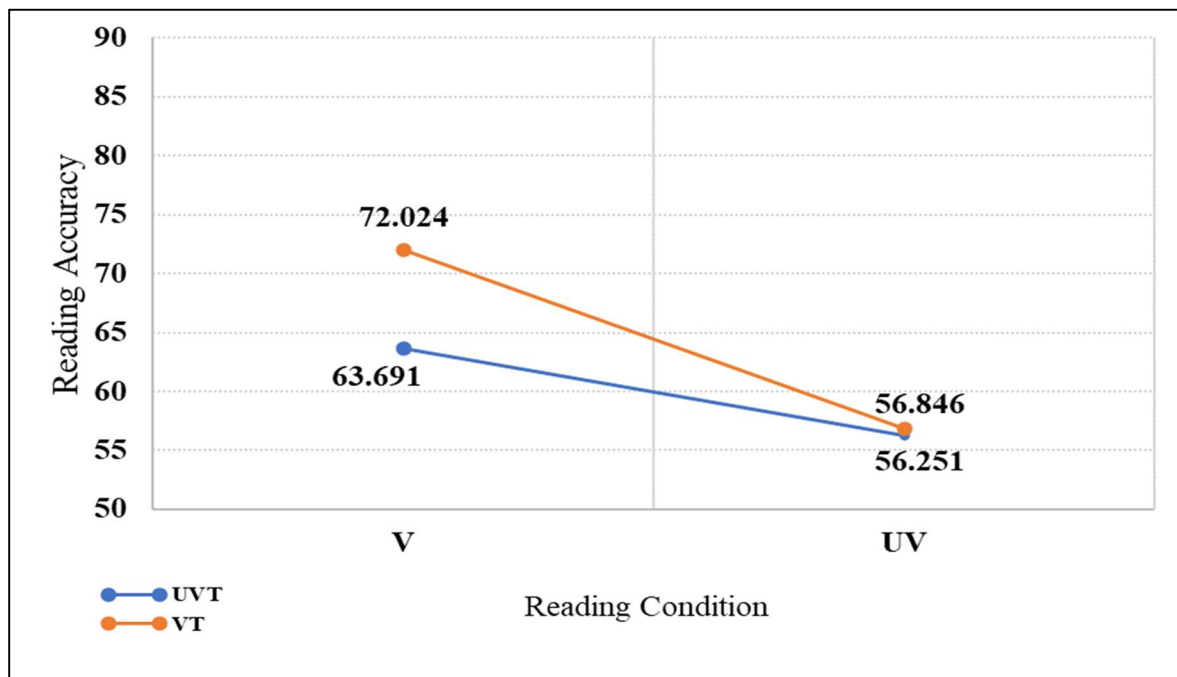
4.3.2.1.1.2 Detailed Scale

Results of the detailed scale analysis showed a significant difference between participants in the beginner UVT group and those in the VT group with respect to target word accuracy. The means of the two groups indicated that participants in the VT group read the target words significantly more accurately than participants in the UVT group (Table 4.39 and Figure 4.26). Furthermore, a significant difference was observed with respect to the reading accuracy of target words under V and UV conditions, with participants in both the groups reading more accurately under the V condition than under the UV condition (Table 4.40). However, no significant interaction was observed between the groups and conditions.

Table 4.39 Means of reading accuracy of target words: beginner level (detailed scale)

GROUP		Mean	95% Confidence Interval	
			Lower Bound	Upper Bound
UVT	VOWELIZED	80.952	75.907	85.998
	UNVOWELIZED	76.339	71.294	81.385
VT	VOWELIZED	88.219	83.174	93.264
	UNVOWELIZED	81.944	76.899	86.990

Table 4.40 Reading accuracy of target words-tests of effects: beginner level (detailed scale)

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	22	5.396	0.030
CONDITION	1	22	6.148	0.021
GROUP * CONDITION	1	22	0.143	0.709

Figure 4.26 Reading accuracy of target words: beginner level (detailed scale)
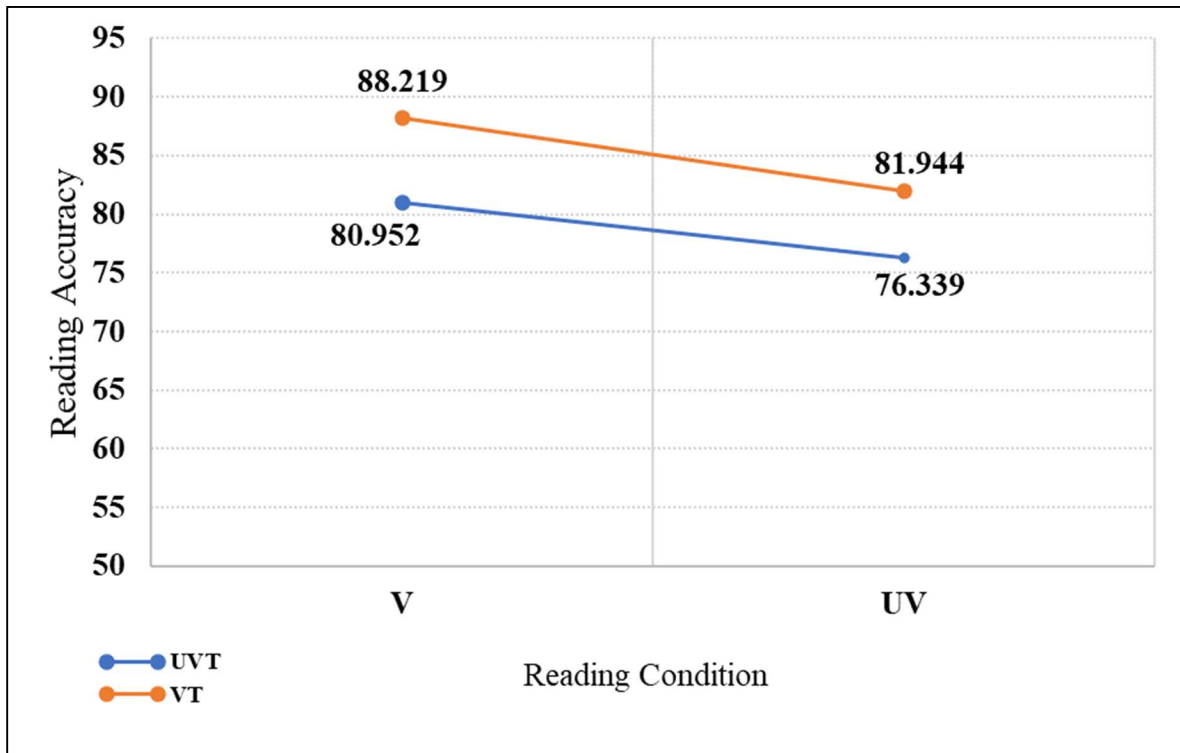
4.3.2.1.2 Intermediate Level

4.3.2.1.2.1 General Scale

Table 4.42 shows a significant difference between groups in terms of the accuracy of reading target words in context. In addition, the intermediate VT group read target words more accurately than the UVT group under both conditions (Table 4.41). A statistically significant difference was found between word conditions (Table 4.42), in that both groups read the V words more accurately than the UV words (Figure 4.27). However, no significant interaction was found between groups and conditions.

Table 4.41 Means of reading accuracy of target words: intermediate level (general scale)

Group	Condition	Mean	95% Confidence Interval	
			Lower Bound	**Upper Bound**
UVT	VOWELIZED	71.251	63.353	79.149
	UNVOWELIZED	64.689	56.791	72.587
VT	VOWELIZED	80.625	72.727	88.523
	UNVOWELIZED	77.188	69.290	85.086

Table 4.42 Reading accuracy of target words-tests of effects: intermediate level (general scale)

Source	Numerator df	Denominator df	F	Sig.
Group	1	18	4.851	.041
Condition	1	18	5.302	.033
Group * Condition	1	18	.518	.481

Figure 4.27 Reading accuracy of target words: intermediate level (general scale)
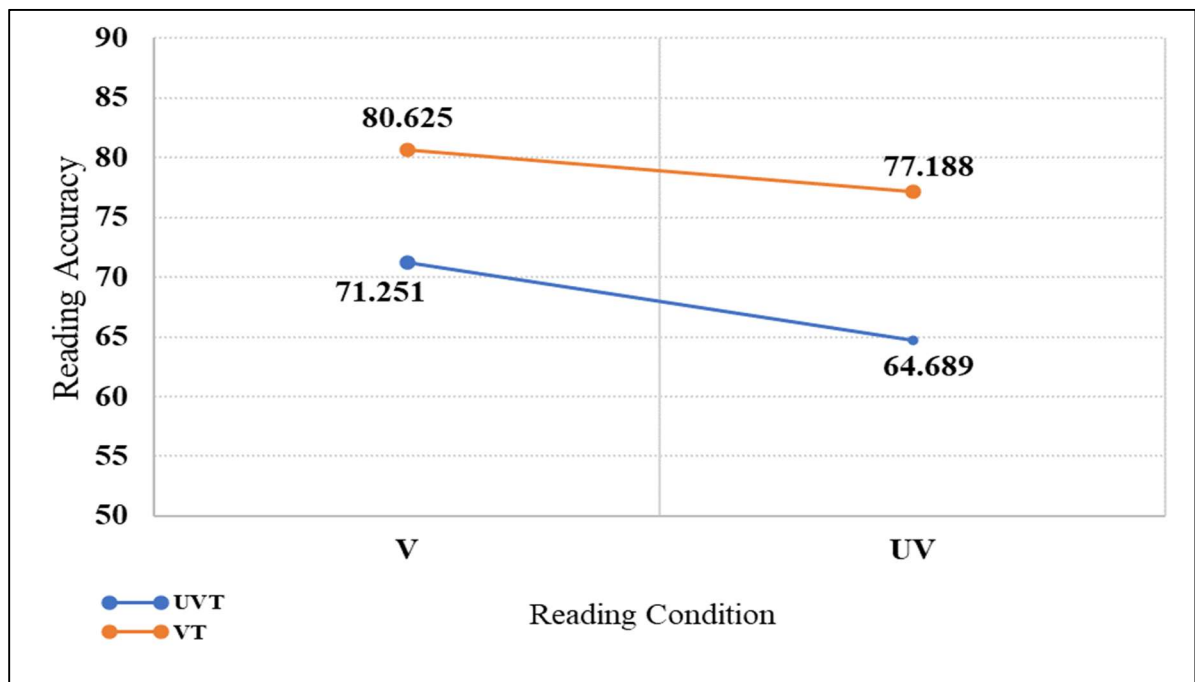
4.3.2.1.2.2 Detailed Scale

Similar to participants in the intermediate in general scale UVT and VT groups, participants in the intermediate UVT and VT groups showed a significant difference with respect to target word reading accuracy (Table 4.44). The means of the two groups indicated that participants in the VT group were more accurate than those in the UVT group under both V and UV conditions (Table 4.43). Furthermore, a significant difference was observed with respect to the reading accuracy of target words under V and UV conditions, with participants in both the groups reading more accurately under the V condition than under the UV condition (Figure 4.28). However, no significant interaction was observed between the groups and conditions (Table 4.44).

Table 4.43 Means of reading accuracy of target words: intermediate level (detailed scale)

GROUP		Mean	95% Confidence Interval	
			Lower Bound	Upper Bound
UVT	VOWELIZED	81.667	76.192	87.141
	UNVOWELIZED	70.444	64.970	75.919
VT	VOWELIZED	92.528	87.053	98.002
	UNVOWELIZED	82.722	77.248	88.197

Table 4.44 Reading accuracy of target words-tests of effects: intermediate level (detailed scale)

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	18	11.538	0.003
CONDITION	1	18	43.128	0.000
GROUP * CONDITION	1	18	0.196	0.663

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Figure 4.28 Reading accuracy of target words: intermediate level (detailed scale)
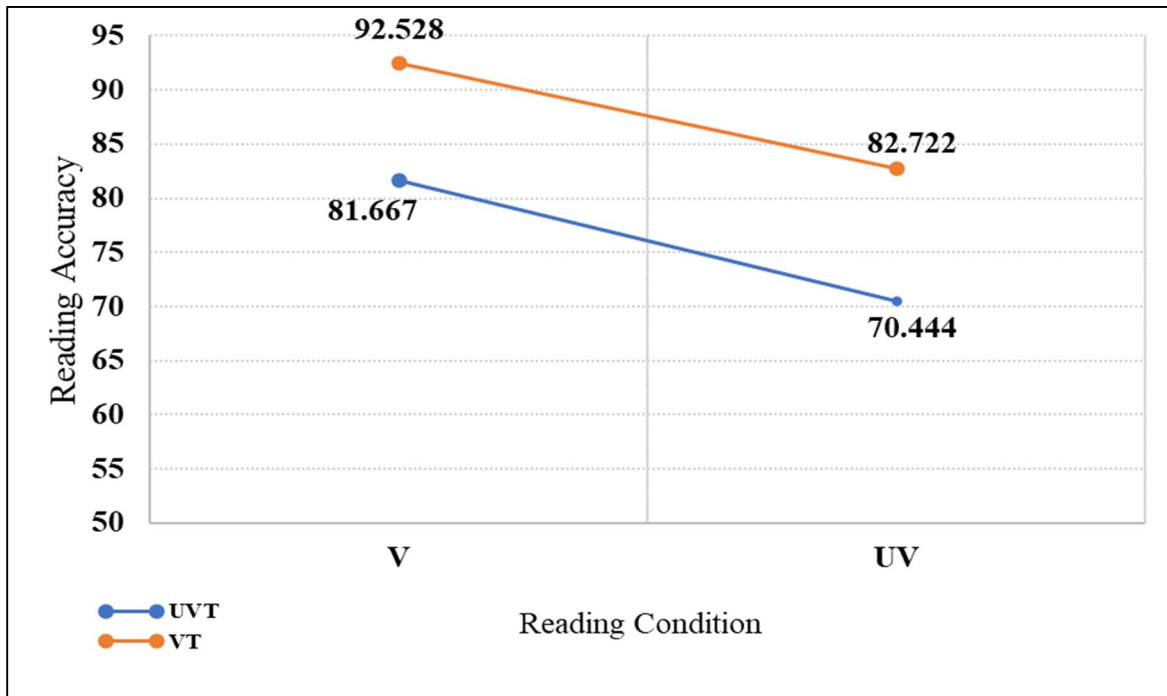
4.3.2.1.3   Advanced Level

4.3.2.1.3.1   General Scale

As for the performance of the advanced groups, no significant differences were found between groups nor conditions in terms of target word accuracy; likewise, no significant interaction was found between groups and conditions (Table 4.46). However, as shown in Table 4.45, the VT group had higher reading accuracy than UVT group under both conditions at an almost equal rate showing an advantage in performance in the VT group over its UVT counterpart. The difference between the V and UV is more obvious in UVT (Figure 4.29).

Table 4.45 Means of reading accuracy of target words: advanced level (general scale)

Group	Condition	Mean	95% Confidence Interval	
			Lower Bound	**Upper Bound**
UVT	VOWELIZED	79.376	74.735	84.017
	UNVOWELIZED	76.876	72.235	81.517
VT	VOWELIZED	81.250	76.609	85.891
	UNVOWELIZED	81.876	77.235	86.517

Table 4.46 Reading accuracy of target words-tests of effects: advanced level (general scale)

Source	Numerator df	Denominator df	F	Sig.
Group	1	8	2.262	.171
Condition	1	8	.202	.665
Group * Condition	1	8	.562	.475

Figure 4.29 Reading accuracy of target words: advanced level (general scale)
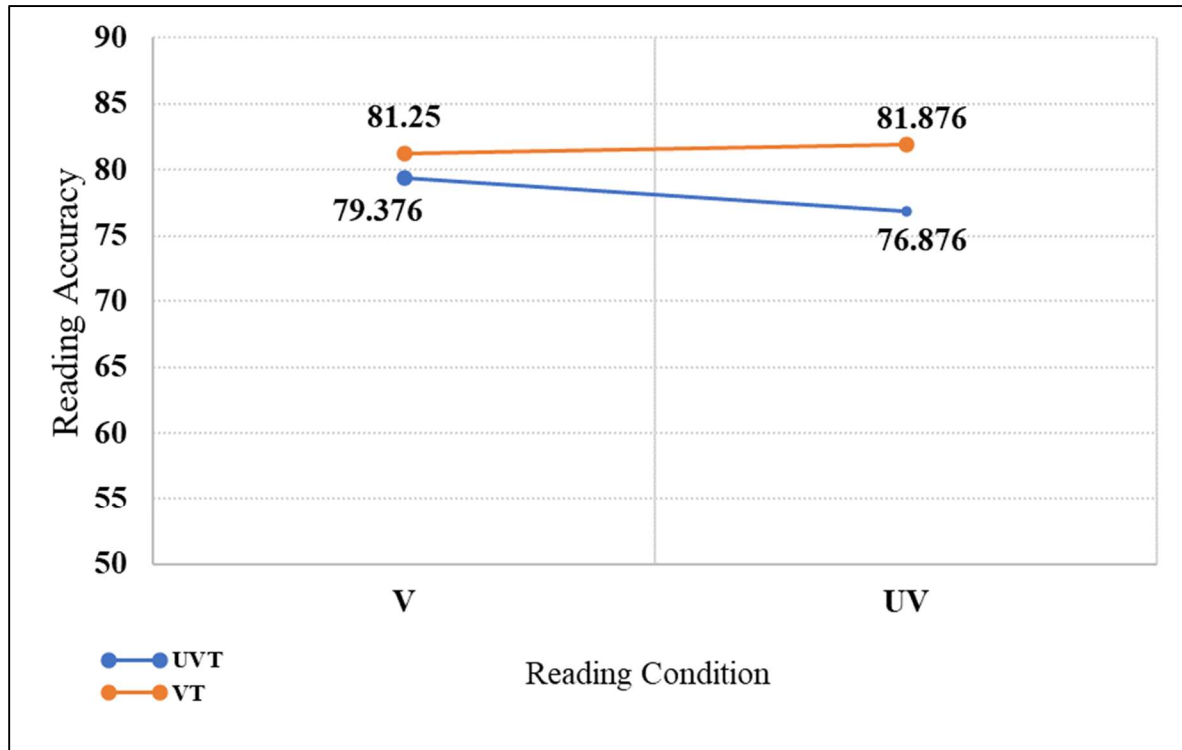
4.3.2.1.3.2 Detailed Scale:

Results of the detailed scale analysis did not show any significant difference between participants in the VT and UVT groups in terms of target word reading accuracy (Table 4.48). However, the means of the two groups indicated that participants in the VT group showed better performance than those in the UVT group (Table 4.47 and Figure 4.30). Moreover, no significant interaction was observed between the groups and conditions at this level. In contrast, a significant difference was observed with respect to reading accuracy under V and UV conditions, with participants in both the VT and UVT groups reading more accurately under the V condition than under the UV condition. However, no significant interaction was observed between the groups and conditions at this level (Table 4.48). To conclude this section, Figures 4.31-4.32 illustrate a summary of reading accuracy of target words at three proficiency levels.

Table 4.47 Means of reading accuracy of target words: advanced level (detailed scale)

GROUP		Mean	95% Confidence Interval	
			Lower Bound	Upper Bound
UVT	VOWELIZED	94.063	90.591	97.534
	UNVOWELIZED	88.125	84.653	91.597
VT	VOWELIZED	94.271	90.799	97.743
	UNVOWELIZED	90.729	87.257	94.201

Table 4.48 Reading accuracy of target words-tests of effects: advanced level: (detailed scale)

Source	Numerator df	Denominator df	F	Sig.
GROUP	1	8	0.654	0.442
CONDITION	1	8	9.657	0.014
GROUP * CONDITION	1	8	0.617	0.455

Figure 4.30 Reading accuracy of target words: advanced level (detailed scale)
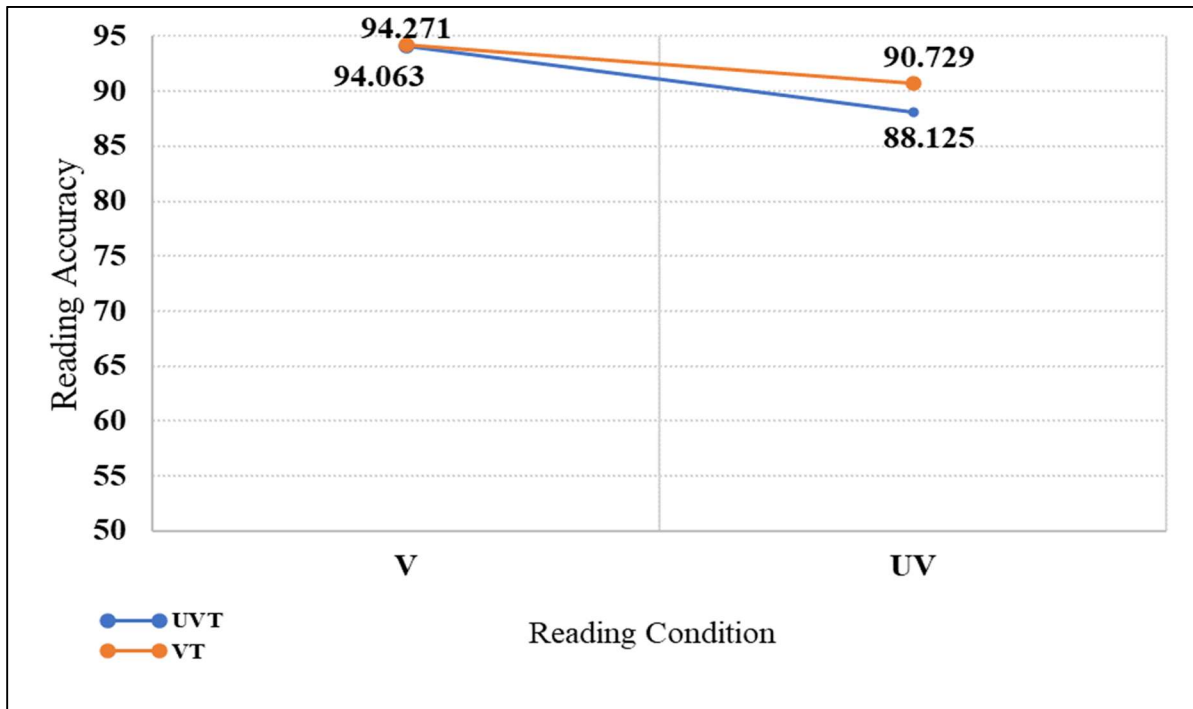
Figure 4.31 Reading accuracy of target words at three proficiency levels (general scale)
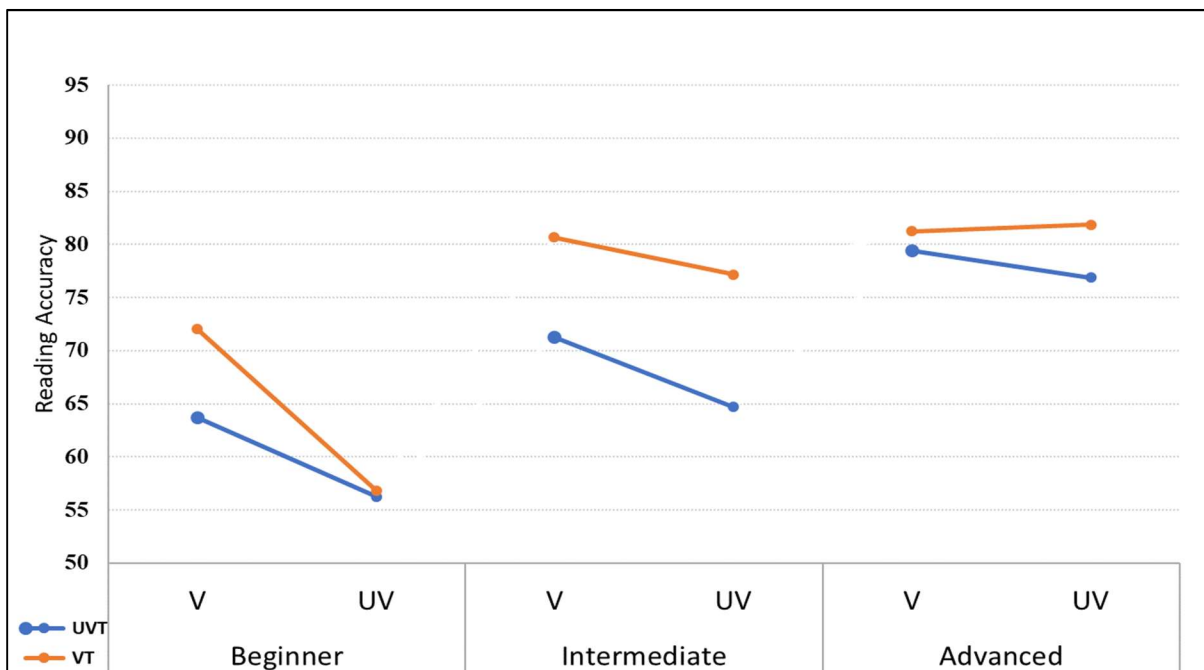
Figure 4.32 Reading accuracy of target words at three proficiency levels (detailed scale)
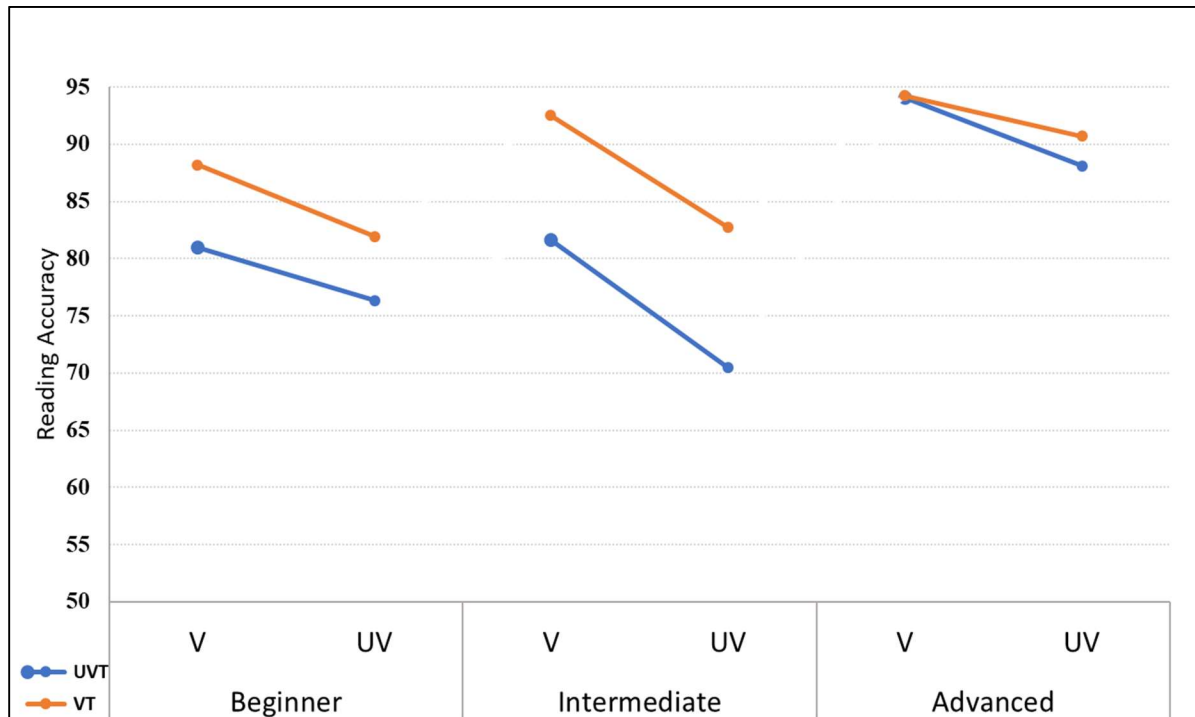
4.3.2.2   Accuracy of Whole Text

4.3.2.2.1   Beginner Level

As shown in Table 4.50, no significant difference was found in terms of text reading accuracy between the beginner UVT and VT groups. However, the means show that the VT group was slightly more accurate than the UVT group under both conditions (Table 4.49). A significant difference was found between conditions, in that the UVT and VT groups read the V text significantly more accurately than the UV text (Table 4.50, Figure 4.33). However, no significant interaction was found between groups and conditions (Table 4.50).

Table 4.49 Means of reading accuracy of texts: beginner level

Group	Condition	Mean	95% Confidence Interval	
			Lower Bound	**Upper Bound**
UVT	VOWELIZED	74.896	69.560	80.231
	UNVOWELIZED	68.438	63.102	73.773
VT	VOWELIZED	75.799	70.463	81.134
	UNVOWELIZED	70.938	65.602	76.273

Table 4.50 Reading accuracy of texts- tests of effects: beginner level

Table 32: Reading Accuracy of Texts - Level 1 - Tests of Effects				
Source	Numerator df	Denominator df	F	Sig.
Group	1	22	.254	.619
Condition	1	22	13.986	.001
Group * Condition	1	22	.278	.603

Figure 4.33 Reading accuracy of text: beginner level

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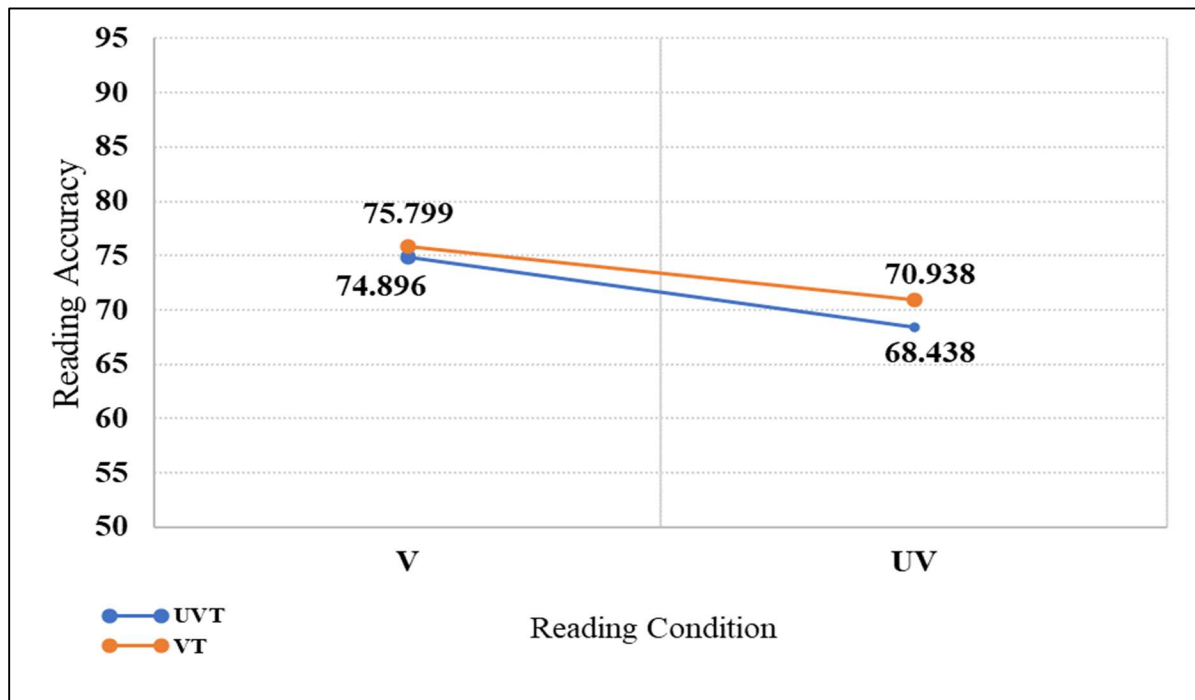
4.3.2.2.2 Intermediate Level

The reading accuracy in the intermediate level differed significantly between that of the UVT group and the VT group (Table 4.52). Table 4.51 shows that the intermediate VT group read more accurately under both V and UV conditions than the UVT group. Furthermore, the reading of both groups under the V condition was statistically more accurate than reading under the UV condition (Table 4.51 and Figure 4.34). By contrast, no significant interaction was found between groups and conditions in terms of reading accuracy in this level.

Table 4.51 Means of reading accuracy of texts: intermediate level

Group	Condition	Mean	95% Confidence Interval	
			Lower Bound	**Upper Bound**
UVT	VOWELIZED	73.510	67.171	79.849
	UNVOWELIZED	66.524	60.185	72.863
VT	VOWELIZED	82.022	75.683	88.361
	UNVOWELIZED	76.525	70.186	82.864

Table 4.52 Reading accuracy of texts- tests of effects: intermediate level

Source	Numerator df	Denominator df	F	Sig.
Group	1	18	5.029	.038
Condition	1	18	24.612	.000
Group * Condition	1	18	.350	.561

Figure 4.34 Reading accuracy of text: intermediate level
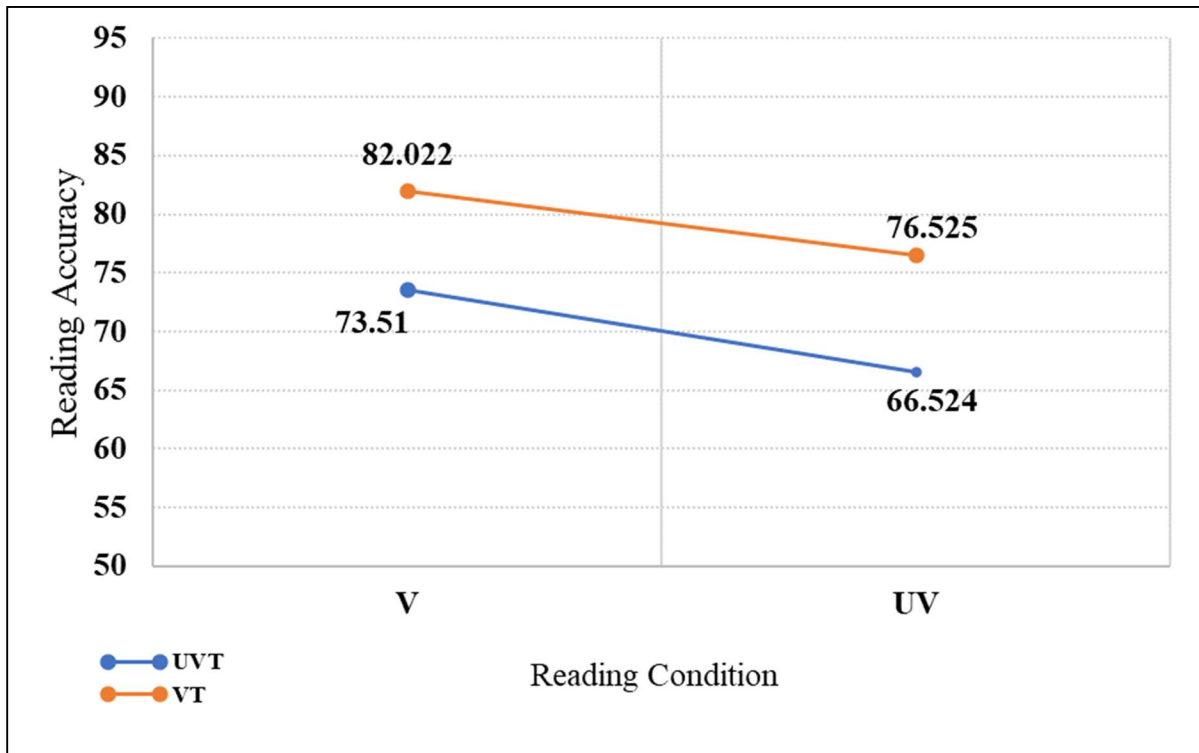
4.3.2.2.3 Advanced Level

As for the performance of the advanced groups, no significant difference was found between the UVT and VT groups in reading under V and UV conditions (Table 4.54). Similarly, no significant interaction was found between groups and conditions. However, the VT group read almost the same under both conditions, whereas different conditions affected reading accuracy by the UVT group and with the VT group maintaining an advantage especially with reading the UV text (Table 4.53, Figure 4.35). To conclude this section, Figure 4.36 illustrates a summary of reading accuracy of texts at three proficiency levels.

Table 4.53 Means of reading accuracy of texts: advanced level

Group	Condition	Mean	95% Confidence Interval	
			Lower Bound	**Upper Bound**
UVT	VOWELIZED	82.733	76.186	89.281
	UNVOWELIZED	80.067	73.519	86.614
VT	VOWELIZED	84.133	77.586	90.681
	UNVOWELIZED	84.000	77.452	90.548

Table 4.54 Reading accuracy of texts- tests of effects: advanced level

Source	Numerator df	Denominator df	F	Sig.
Group	1	8	.503	.498
Condition	1	8.000	.492	.503
Group * Condition	1	8.000	.403	.543

Figure 4.35 Reading accuracy of text: advanced level
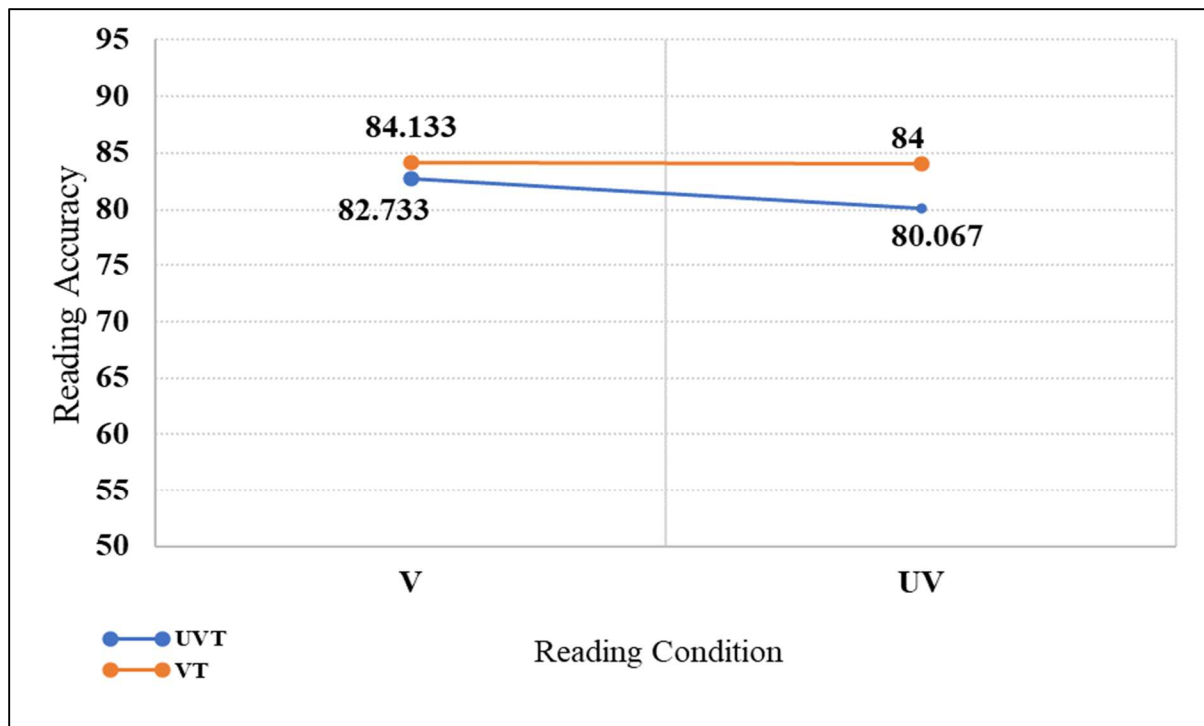
Figure 4.36 Reading accuracy of texts at three proficiency levels
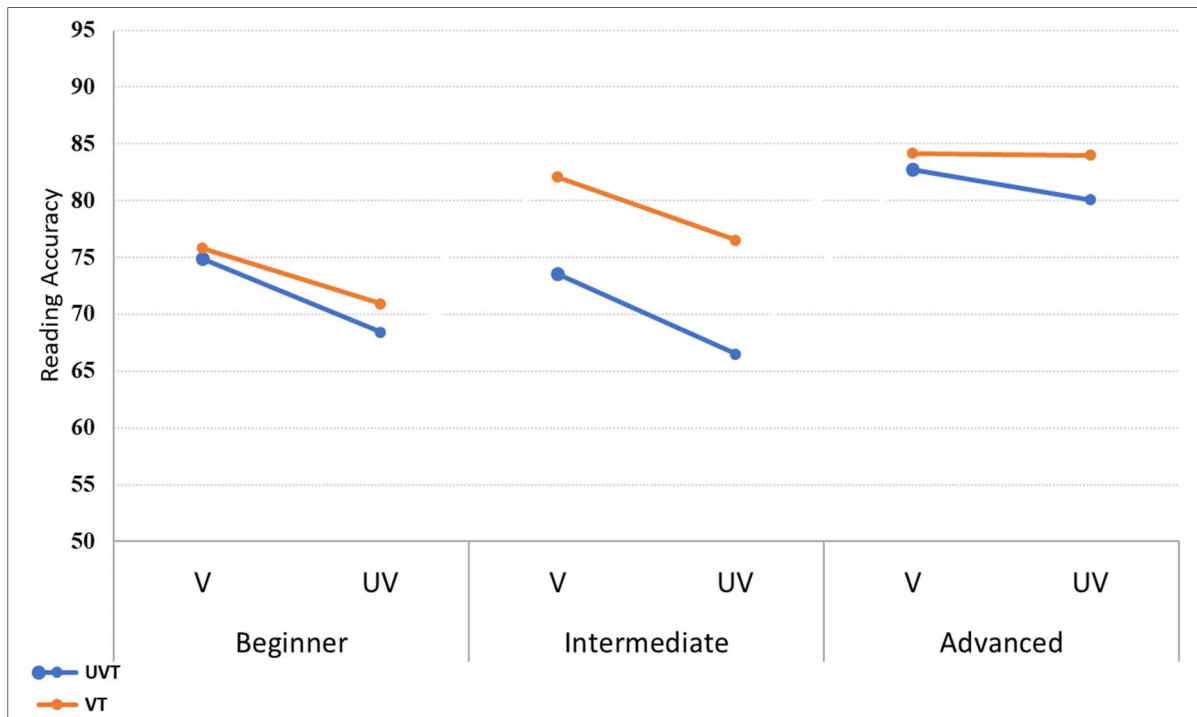
4.3.3 Results of Comprehension of Target Words in Texts

The fourth research question was as follows:

> **RQ** 4. Do diacritics play a role in reading comprehension for learners who rely
>
> on V textbooks versus those who rely on UV texts at different stages of Arabic
>
> L2 acquisition?

The comprehension questions were related to the target words in each text, and the

participants at each level were asked to write the correct meaning of each word based on

its position in the text; then, their scores were measured for each question using the

following scale: correct answer = 1 point, incorrect answer = 0 points. The data related to

comprehension of target words in both V and UV texts was analyzed, and the results are reported separately below by proficiency.

4.3.3.1.1 Beginner Level

In terms of reading comprehension by the beginner groups, the only statistically significant difference which was found was between conditions (Table 4.56). Table 4.55 shows that both the UVT and VT groups had higher reading comprehension under the V condition (Figure 4.37). However, Table 4.55 also shows that VT group's comprehension was higher than UVT group's comprehension, but this difference is not statistically significant. No significant interaction was found between groups and conditions.

Table 4.55 Means of reading comprehension of target words in texts: beginner level

Group	Condition	Mean	95% Confidence Interval	
			Lower Bound	Upper Bound
UVT	VOWELIZED	58.928	47.453	70.402
	UNVOWELIZED	49.405	37.930	60.880
VT	VOWELIZED	66.668	55.193	78.142
	UNVOWELIZED	51.783	40.309	63.258

Table 4.56 Reading comprehension of target words in texts- tests of effects: beginner level

Source	Numerator df	Denominator df	F	Sig.
Group	1	22	.001	.972
Condition	1	22.000	14.508	.001
Group * Condition	1	22.000	1.478	.237

Figure 4.37 Reading comprehension of target words in texts: beginner level
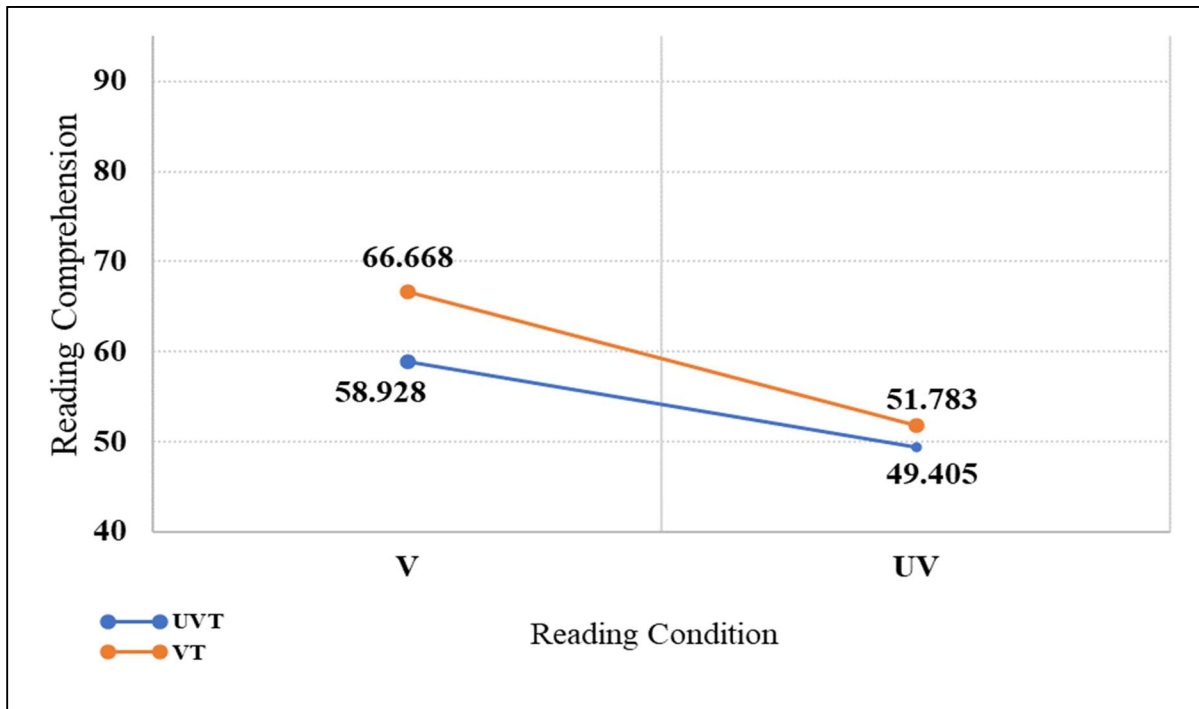
4.3.3.1.2 Intermediate Level

Table 45 shows the means of reading comprehension in intermediate groups. These values show that the VT group had higher reading comprehension than the UVT group under both conditions; but the differences are not statistically significant. No significant interaction was found between groups and conditions (Table 4.58). However, the VT group had almost equal means under both conditions, while the UVT group had different means between the two conditions showing slightly fluctuation in performance (Table 4.57, Figure 4.38).

Table 4.57 Means of reading comprehension of target words in texts: intermediate level

Group	Condition	Mean	95% Confidence Interval	
			Lower Bound	**Upper Bound**
UVT	VOWELIZED	50.627	33.785	67.469
	UNVOWELIZED	47.500	30.658	64.342
VT	VOWELIZED	57.815	40.973	74.657
	UNVOWELIZED	57.500	40.658	74.342

Table 4.58 Reading comprehension of target words in texts-tests of effects: intermediate level

Source	Numerator df	Denominator df	F	Sig.
Group	1	18	.678	.421
Condition	1	18	.117	.736
Group * Condition	1	18	.078	.783

Figure 4.38 Reading comprehension of target words in texts: intermediate level
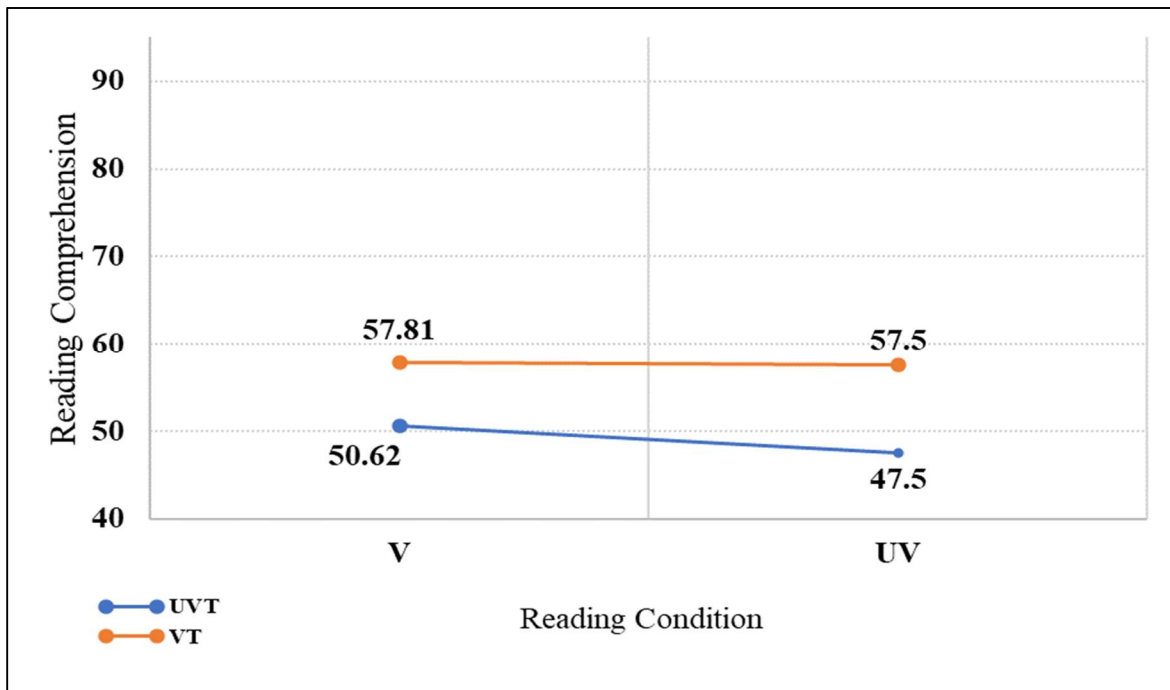
4.3.3.1.3   Advanced Level

Similarly, in the advanced groups exhibited no statistically significant differences in their performance (Table 4.60). However, the means show that the VT group maintained an advantage of reading comprehension over the UVT group (Table 4.59). Both groups had approximately the same level of comprehension under both V and UV conditions (Figure 4.39). No statistically significant interactions were found between groups nor conditions. To conclude this section, Figure 4.40 illustrate a summary of comprehension of target words at three proficiency levels.

Table 4.59 Means of reading comprehension of target words in texts: advanced level

Group	Condition	Mean	95% Confidence Interval	
			Lower Bound	**Upper Bound**
UVT	VOWELIZED	46.876	27.322	66.430
	UNVOWELIZED	44.378	24.824	63.932
VT	VOWELIZED	65.002	45.448	84.556
	UNVOWELIZED	62.500	42.946	82.054

Table 4.60 Reading comprehension of target words in texts-tests of effects: advanced level

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	8	85.246	.000
Group	1	8	2.341	.165
Condition	1	8	.660	.440
Group * Condition	1	8	.000	.999

Figure 4.39 Reading comprehension of target words in texts: advanced level
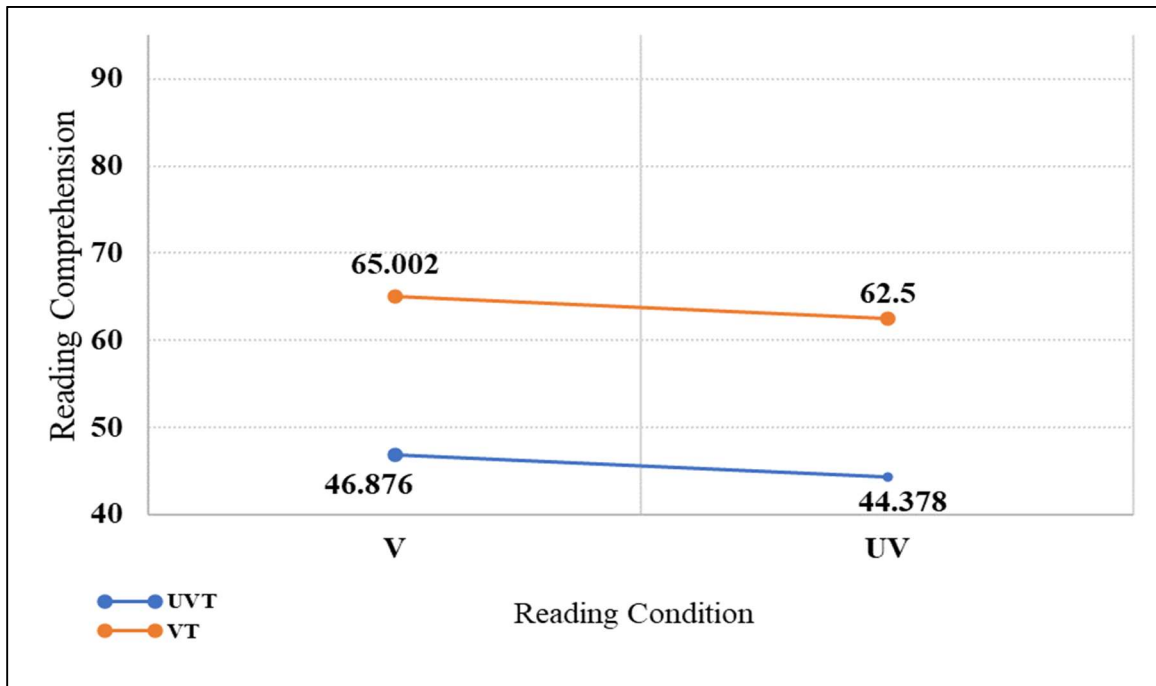
Figure 4.40 Reading comprehension of target words in texts at three proficiency levels
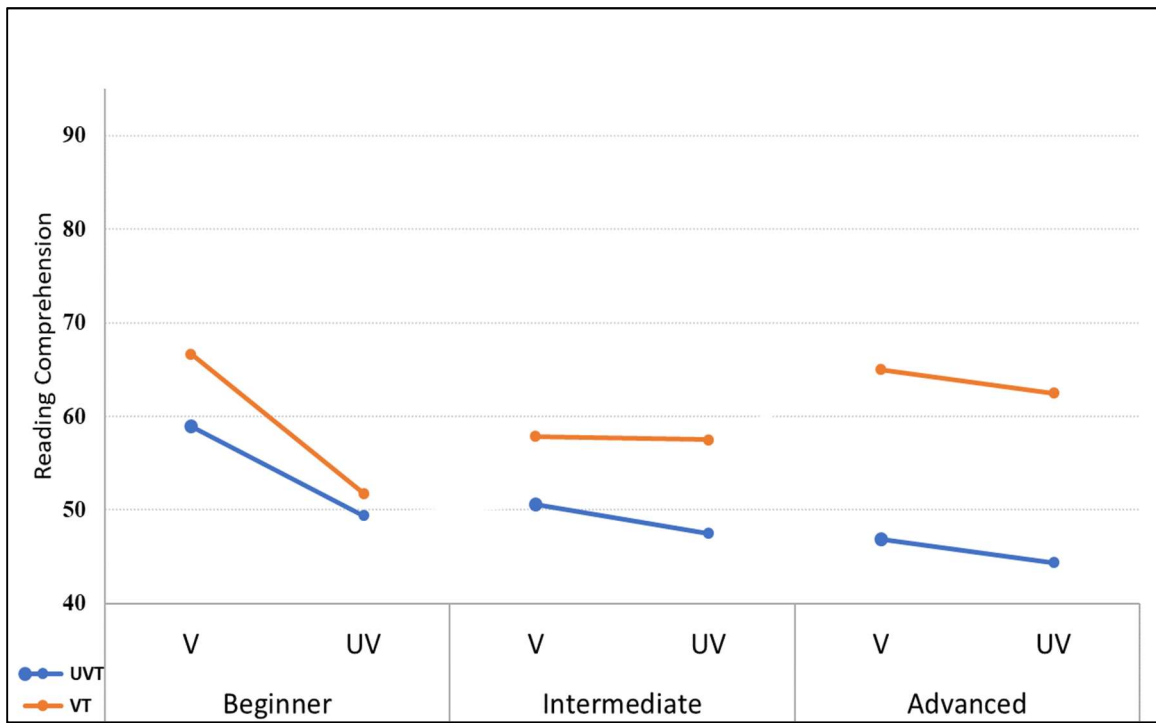
4.4 Summary

In this chapter, the results of two main tasks were reported according to the proficiency level of the participants. In the first task, analysis of isolated word reading speed indicated that participants of VT group significantly read isolated words at a faster speed than participants in the corresponding UVT group in all proficiency levels. Furthermore, the results showed that the performance of participants in all proficiency levels of VT group was nearly stable under both V and UV conditions, whereas the performance of participants in all proficiency levels of UVT group was unstable and their reading speed under the V condition was considerably slower than that under the UV condition (Figure 4.7).

The first task also analyzed the reading speed of words in terms of H and NH types. The Results showed that participants in the beginner and intermediate VT group could read both H and NH type words at a significantly faster speed than those in the beginner and intermediate UVT groups under V and UV conditions. Moreover, advanced participants in the VT groups showed a better speed for reading both the word types than participants in the UVT group under both V and UV conditions. However, in both groups of participants at the advanced level, vowelized homographic and vowelized non-homographic words were read more slowly than un-vowelized homographic and non-homographic words (Figure 4.8).

In the second part of first task, the accuracy of reading isolated words was analyzed on two main scales, namely, general and detailed scales. The general scale considers a word to be a whole unit and adopts general criteria to determine the

pronunciation of each word (correct pronunciation of a word, 1 point; incorrect pronunciation of a word, 0 points; and hesitation [self-correction], 0.5 points). The result obtained using the general scale indicated that participants in the intermediate and advanced level of VT group maintained an advantage of accuracy for reading isolated words over participants in the UVT group under UV condition. Furthermore, VT group participants read V words more accurately than UV words in all of proficiency levels whereas it seems that their UVT counterparts encountered difficulties while reading V words (Figure 4.18).

As for the accuracy of reading isolated H and NH words the results showed that participants in the VT group mostly read H and NH words more accurately than participants in the corresponding UVT group under both V and UV conditions. Additionally, participants in the beginner and advanced VT group showed stable accuracy for reading isolated words than participants in the corresponding UVT group, indicating excellent reading accuracy under both V and UV conditions. The performance of participants in the intermediate VT group was slightly wobbling; but the reading accuracy of these participants was better than that of participants in the intermediate UVT group (Figure 4.20).

To obtain more specific and detailed results, the detailed scale of accuracy was used. This scale considers every short vowel in each word, except the last one, which usually indicates the case ending of a word. The results obtained using this scale showed a remarkable advantage of participants especially in the beginner, and intermediate VT groups over those in the corresponding UVT groups. Interestingly, these results also

confirmed that participants in the VT group showed a very stable performance under both V and UV conditions, whereas participants in the UVT group showed an unstable performance under both the conditions (Figure 4.19).

The second task of this study was intended to answer the three remaining questions that related to reading speed, accuracy, and comprehension in context. Results for reading speed of text showed that participants in the beginner, intermediate VT groups read texts at a significantly faster speed than participants in the corresponding UVT groups. Moreover, advanced VT group maintained an advantage of reading speed over their UVT counterparts. Additionally, the result also showed that participants in the VT group maintained a stable reading speed under both V and UV conditions. The difference between their reading speed under both the conditions was small. However, the UVT group still showing an unstable performance since the difference between their reading speed under both V and UV conditions was considerably high in all proficiency levels.

Accuracy in the second task was divided into two parts: (1) target word accuracy and (2) whole-text accuracy. Target words in each text were controlled in terms of suitability, familiarity, and exposure comparability, between the UVT and VT groups. This part of task was also analyzed by using the two main accuracy scales -general and detailed scales- similar to that used in the previous task (Isolated Words).

The result obtained using the general scale showed that participants in the VT group read both V and UV target words more accurately than participants in the UVT group, especially participants with intermediate proficiency level. However, both UVT

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and VT groups read target words under V condition more accurately than UV condition. Furthermore, participants in the intermediate and advanced VT groups showed higher stability in reading under V and UV conditions than participants in the corresponding UVT groups (Figure 4.31).

Results obtained using the detailed scale showed that participants in both UVT and VT groups were more accurate in reading V target words than UV target words. Moreover, participants in the VT group were more accurate in reading target words than participants in the UVT group. Furthermore, the differences between UVT and VT groups were significantly obvious among participants with beginner and intermediate proficiency levels. (Figure 4.32).

The whole-text accuracy was determined using the general scale to obtain a broad understanding of the reading accuracy of texts under V and UV conditions. The results showed that participants in both the groups read V texts more accurately than UV texts. However, participants in the VT group read both V and UV texts more accurately than participants in the UVT group, especially participants with intermediate and advanced proficiency levels. Moreover, participants in the intermediate and advanced VT groups showed higher stability in reading under V and UV conditions than participants in the corresponding UVT groups (Figure 4.36).

Finally, Results of comprehension analysis of target words in texts showed that participants in the beginner, intermediate, and advanced VT groups maintained an advantage of target word comprehension over their UVT counterparts. However, the intermediate and advanced levels in UVT and VT groups comprehend V target words

slightly better than UV. Additionally, the beginner participants in both groups

comprehend V target words significantly better than UV. (Figure 4.40)

Chapter 5

Discussion and Conclusion

5.1 Overview

This chapter discusses the findings presented in the previous chapter. The discussion includes the findings of each study task in light of previous studies, relevant theories of orthographic depth, and the historical development of diacritics in the Arabic writing system. The chapter concludes with a discussion of the limitations and implications of the study along with suggestions for further research.

5.2 First Task (Isolated Words)

5.2.1 Word Reading Speed

The objective of the word reading task was to identify the role of diacritics in word recognition by answering the first research question:

RQ 1. Do diacritics play a role in recognition of isolated words by learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of acquisition of Arabic as a second language?

Word recognition in this first task was determined with two measurements: reading speed and reading accuracy. The main reading speed results of the isolated words indicated that the reading of vowelized, isolated words required more time than reading un-vowelized words at all three proficiency levels of the un-vowelized textbook group (Figure 4.7). This result supports the findings of previous studies conducted in Arabic as an L1 (Ibrahim, 2013; Taha, 2016; Taha & Azizah, 2017) and in Arabic as an L2 (Hansen, 2010), which observed that the reading speed of learners slowed when they read under vowelized conditions. However, the result of the vowelized textbook group showed that participants at the beginner level read vowelized and un-vowelized words almost at the same speed whereas their un-vowelized beginner counterparts read vowelized words slower than un-vowelized. Moreover, the time difference was negligible between reading the vowelized and un-vowelized words at intermediate and advanced levels by the vowelized group. The result of vowelized textbook group supports the argument that relying on a vowelized textbook in learning Arabic as an L2 might help to improve reading speed under both vowelized and un-vowelized conditions (figures 4.3 and 4.5 in chapter 4). Recall, previous studies ignored the effect of the learners' input, which revolves around repeated exposure to each word during the learning process (i.e., frequency). The present study attempted to control for this important factor by noting the frequency of each word in each level of textbook which should be fewer than 12 times to

reduce the effect of high frequency exposure on word recognition. Consequently, with this more stringent research design, it can be claimed that the findings of un-vowelized textbook group in this study support the findings of previous studies, which found that reading un-vowelized words proceeds more rapidly than reading vowelized words. This result can be explained in light of shallow orthography, which, in Arabic, is the vowelized form of writing (i.e., uses diacritics). Vowelized words contain many symbols and signs that force the reader to focus and practice caution, causing the reader to spend additional time when reading vowelized words versus the time needed to read un-vowelized words. Nevertheless, interestingly, it appears that beginner participants of vowelized textbook group needed the same time to read words under both vowelized and un-vowelized conditions. Additionally, intermediate and advanced beginner level participants of the vowelized textbook group could read both vowelized and un-vowelized words with a negligible time difference. This reading speed stability can result from depending on shallow orthography (vowelized textbook) during their learning process, which helps learners to improve their reading with and without diacritics and to achieve reading fluency earlier than those who depend on deep orthography (an un-vowelized textbook), as can be seen in the next section.

This study was not limited to examining the direct effect and role of diacritics on isolated word reading performance. Recall, the study also compared two groups of participants by taking into account the effect that the manner of learning and practicing Arabic words in their programs had on their reading ability. The main resource for learning Arabic in both groups in this research was a textbook, which either included or

excluded diacritics from texts. Many criteria were taken into account when designing the task. In addition to controlling the frequency of each word, the comparability of exposure to each word between both groups was controlled to ensure that both groups' exposure to each word was nearly equal.

The reading speed results of the isolated word recognition task demonstrated that all three proficiency levels of participants who used a vowelized textbook read significantly faster than those who used the un-vowelized textbook when reading both vowelized and un-vowelized words. Interestingly, the results also showed that the performance of the learners who relied on the vowelized textbook in all three proficiency levels was stable under both vowelized and un-vowelized conditions. In other words, the result indicated that even those learners read vowelized words more slowly than un-vowelized words, and the time difference was negligible between reading the vowelized and un-vowelized words (for example. 2 seconds to read vowelized word versus 1.95 seconds to read un-vowelized word). On the other hand, the results of the learners who relied on the un-vowelized textbook at all three proficiency levels demonstrated greater discrepancy between reading speeds under both conditions (i.e., vowelized words were read in 2.9 seconds, whereas un-vowelized words were read in 2.5 seconds). Thus, it appeared that the un-vowelized textbook group encountered considerable difficulties in terms of reading speed when reading vowelized words (Figure 4.7).

Thus, the results of the vowelized textbook group, contradicted the idea that supplying diacritics in text when teaching Arabic as a foreign language might impede learners' reading when a word is encountered without diacritics. On the contrary, based

on the findings of this study, it appeared that excluding diacritics from text when teaching Arabic as a foreign language might impede un-vowelized textbook group learners' reading speed in both vowelized and un-vowelized conditions, but especially when reading vowelized text. In other words, teaching Arabic words and text without diacritics might negatively affect learners' reading speed when they later encounter words with diacritics, and it also could delay improvement in reading speed of un-vowelized words.

This observation is comparable to previous studies that examined the effect of shallow orthography on the reading process in different languages and observed that learners who relied on transparent orthographies achieved reading fluency earlier than their counterparts who relied on deeper orthographies (Frith, Wimmer, & Landerl, 1998; Goswami, Gombert, & de Barrera, 1998; Seymour, Aro, & Erskine, 2003). Similarly, this study's results indicated that diacritics appeared (shallow orthography) to assist in the development of reading speed in learners of Arabic as an L2 under both vowelized and un-vowelized conditions.

From an alternate perspective, this study also analyzed the reading speed of isolated words in terms of word type (e.g., either homographic or non-homographic). The main historical reason for the development of Arabic orthography and supplying diacritics in Arabic text was to eliminate the ambiguity of homographic words even for native Arabic readers who needed to recognize the correct pronunciation and meaning. The results of this study showed that participants who used the vowelized textbook at the beginner and intermediate levels could read both homographic and non-homographic words, under both vowelized and un-vowelized conditions, at a significantly faster speed

than those at the beginner and intermediate levels using the un-vowelized textbook. Moreover, advanced participants using the vowelized textbook demonstrated superior speed at reading both types of words than participants who used the un-vowelized textbook, under both vowelized and un-vowelized conditions. This result also supports the claim that supplying diacritics when teaching Arabic as a foreign language may assist in the development of increased reading speed under vowelized and un-vowelized conditions for both homographic and non-homographic words.

However, in both groups of participants at the advanced level, vowelized homographic and vowelized non-homographic words were read more slowly than un-vowelized homographic and non-homographic words (Figure 4.8). This result can be explained by the fact that, when both word types appeared with diacritics, readers took more time to read them, which supports the idea that diacritics slow the reading speed of learners of Arabic as a foreign language because the reader must deal with a large number of signs and symbols.

In summing up the findings of the first task, it can be said that, as found in previous studies (Ibrahim, 2013; Taha, 2016; Taha & Azizah, 2017; Hansen, 2010) participants of un-vowelized textbook group took more time to read the vowelized words than the un-vowelized words. This result appears comparable with Hansen's (2010) idea that "for beginner and intermediate learners of Arabic, the additional graphical information that vowels represent adds a heavy cognitive burden on the already heavily charged decoding system. Due to this cognitive 'overload vowel' information cannot be utilized" (p. 578). However, it is important to note that, in this study, the participants who

relied on the vowelized textbook in their learning program from the beginner level seemed able to decode words and use the diacritics advantageously. Their reading speed results showed great stability in all proficiency levels under both conditions (see Figure 4.7). Namely, they could read vowelized and un-vowelized words with a slight difference time between them.

Yet, the results of the un-vowelized textbook group might also be comparable with Hansen's (2010) idea, as their results showed discrepancy in reading speed of vowelized versus un-vowelized words. This could be noticed in the significant interaction between group and condition at the beginner and intermediate levels and the nearly significant interaction that was found in the results of the advanced level (Tables 4.2, 4.6, and 4.10). However, the whole picture of word recognition cannot be complete by an examination of only reading speed. Other elements must be examined, including accuracy, which is discussed in the next section.

5.2.2   Word Reading Accuracy

Reading accuracy constituted the second measurement of word recognition in this first task of the study. It was measured according to two main scales: the general and detailed scales. The general scale deals with the word as a whole unit, such that any error in pronouncing any part of the word was considered incorrect pronunciation of the entire word. The results based on this scale indicated that the study participants who relied on the vowelized textbook—along with their performance on reading speed of isolated

words that was discussed in the previous section—maintained an advantage in terms of reading accuracy over their counterparts who relied on the un-vowelized textbook.

Notably, the learners using the vowelized textbook always read vowelized words more accurately than un-vowelized words, which is comparable with previous studies (Abu-Rabia, 1997, 1999; Seraye, 2004; Maroun & Hanley, 2017; Abu-Hamour, Al-Hmouz, & Kenana, 2013). This benefit of reading with diacritics was consistent with the goal of the diacritics system in Arabic orthography, which aimed to improve accuracy and comprehension when reading Arabic texts (Jum'ah, 1967; Framawi, 1978; Alhamad, 1982; Sharshal, 2000; Ismaeel, 2001; Alhassan, 2003). In contrast, the participants who used the un-vowelized textbook appeared to encounter difficulties when reading vowelized words. This fact could be explained by their lack of exposure to diacritics in their textbook, which exposed them to words with diacritics one time (in the new vocabulary lists), after which they encountered these words without diacritics in the remaining texts and practice drills. Therefore, reading words with diacritics may have resulted in the "heavily charged decoding system" (Hansen, 2010, p. 578) and confused them during the reading process.

To achieve more specificity in measuring the reading accuracy of isolated words, the detailed scale was also used in this study. This scale considered every short vowel in each word, except the last vowel indicating the case ending of a word, which is not the focus of this study. The results obtained using this scale showed a near-significant advantage achieved by participants using the vowelized textbook at the beginner and intermediate levels and maintained an advantage at the advanced level over their

counterpart participants in the un-vowelized textbook group. Interestingly, the results also confirmed that participants using the vowelized textbook had a very stable performance under both vowelized and un-vowelized conditions, whereas participants using the un-vowelized textbook seemed to display unstable performance. It also appeared that the un-vowelized textbook group encountered difficulties when reading vowelized words (Figure 4.19).

In terms of the accuracy of reading isolated homographic and non-homographic words, the results indicated that participants using the vowelized textbook most often read both types of words more accurately, under both vowelized and un-vowelized conditions, than the participants in the un-vowelized textbook group. Based on this result, it would appear that the vowelized textbook participants benefited from diacritics in terms of improving their reading accuracy of both types of words at all three proficiency levels. Moreover, the vowelized textbook group read both homographic and non-homographic words under the vowelized condition more accurately than in the un-vowelized condition.

In contrast, the results also showed that, at the beginner level, the un-vowelized textbook participants seemed to encounter significant difficulties when reading homographic words under the vowelized condition, which explained the significant interaction that was found between group and condition in the results of this level (see Table 4.15). On the one hand, this could be a result of the high level of ambiguity of homographic Arabic words. On the other hand, it could be a result of a lack of practice at reading with diacritics.

Consequently, based on the measurements of the general and detailed scales and according to the results of reading homographic and non-homographic words, it can be seen that the participants who relied on the vowelized textbook maintained an advantage over their counterpart participants in the un-vowelized textbook group to improve their reading accuracy of vowelized words. This benefit of having had exposure to diacritics might extend beyond improvement at reading vowelized words to improvement at reading un-vowelized words as well. That is, the results of the vowelized textbook participants may offer supporting evidence that improvement at reading accuracy of vowelized words was not only the benefit of diacritics. General scale results revealed that the vowelized textbook participants also maintained advantage in terms of reading accuracy of un-vowelized words over their counterparts in the un-vowelized textbook group (Figure 4.18).

Another piece of evidence that may illustrate the benefit of learning Arabic with diacritics from the earliest stages can be seen in the results of the detailed scale, which showed that participants who relied on the vowelized textbook achieved a high level of stability in reading accuracy performance under both vowelized and un-vowelized conditions in all three proficiency levels (Figure 4.19). The variance in reading performance between the two groups can also be explained in light of the role of shallow orthography, which might accelerate the acquisition of reading skills, as many studies have suggested (Frith, Wimmer, & Landerl, 1998; Goswami, Gombert, & de Barrera, 1998; Seymour, Aro, & Erskine, 2003). Recall that diacritics in Arabic change the orthography

from deep to shallow (with diacritics), which carries all of the phonological information of words, facilitates the decoding process, and increases the level of accuracy.

In sum, the first task revealed that the participants who relied on the vowelized textbook from the early stages of Arabic learning improved their word recognition in terms of reading speed and accuracy, both when reading with and without diacritics. This contradicts the concept that vowels add "a heavy cognitive burden on the already heavily charged decoding system [and] due to this cognitive 'overload vowel' information cannot be utilized" (Hansen, 2010, p. 578). In contrast, by looking at the results of the participants who relied on the un-vowelized textbook, diacritics may add such a burden to the decoding system (Figures 4.9, 4.11, 4.14, and 4.15). This raises the potential argument that teaching Arabic words with diacritics from the early stages might help accelerate the improvement of word recognition ability in terms of speed and accuracy, while teaching Arabic words without diacritics might burden and delay that same ability.

5.3   Second Task: Texts

In text-reading task, the role of diacritics was measured, in context, in terms of reading speed, accuracy, and comprehension. This task was designed to answer the second, third, and fourth research questions. Each research question is discussed separately, immediately below.

5.3.1 Speed of Reading Texts

In this part of the task, the reading speed of vowelized and un-vowelized texts was measured to answer the second research question:

> **RQ 2**. Do diacritics play a role in reading speed for learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of acquisition of Arabic as a second language?

The results demonstrated that the speed of reading vowelized text was significantly slower than reading un-vowelized text in all three proficiency levels. Several previous studies in Arabic as a first and second language found similar results, suggesting that reading vowelized text usually takes more time than reading un-vowelized text (Hansen, 2010; Taha 2016; Taha & Azizah, 2017). The result of this study can be explained in terms of the number of visual symbols that readers dealt with in each text. That is, vowelized text contains more signs and symbols than un-vowelized text. Therefore, readers focus more attention on the vowelized text, which leads to them reading it more slowly than they would un-vowelized text.

However, upon comparing the two groups in this study—those who used a vowelized textbook and those who used an un-vowelized textbook—two observations become apparent. On the one hand, participants at the beginner and intermediate levels of the vowelized textbook group read both vowelized and un-vowelized texts at a significantly faster speed than their counterpart participants in the un-vowelized textbook group. Moreover, learners at the advanced level in the vowelized textbook group

maintained an advantage of reading speed over their un-vowelized textbook counterparts. This can be explained as a result of the learning process in both groups; namely, those used to reading Arabic texts with diacritics in their textbooks from the early stages seemed to benefit from this experience in terms of improving their reading speed under both vowelized and un-vowelized conditions. In contrast, those used to reading Arabic texts without diacritics in their textbooks seemed to encounter difficulties in terms of reading speed, especially under vowelized conditions. This observation is comparable to the idea of shallow orthography and its effect on facilitating and accelerating the acquisition of reading, as has been suggested by several studies in languages that have a transparent orthography in comparison with other languages having deep orthography (Frith, Wimmer, & Landerl, 1998; Goswami, Gombert, & de Barrera, 1998; Seymour, Aro, & Erskine, 2003).

On the other hand, interestingly, this study's results showed that participants in the vowelized textbook group maintained a stable reading speed under both vowelized and un-vowelized conditions, with very little difference in speed between the two conditions. On the other hand, participants in the un-vowelized textbook group showed an unstable performance, because the difference between their reading speeds under both vowelized and un-vowelized conditions was considerably high at all proficiency levels (Figure 4.24). The stability of the reading speed in the vowelized textbook group provides counter evidence to the proposal that assumes diacritics add "a heavy cognitive burden," especially at the beginner and intermediate levels (Hansen, 2010, p. 578). By contrast, Hansen's (2010) argument could apply to learners who did not learn Arabic with

diacritics, as can be seen in the results of this study, which indicated they encountered

noticeable difficulty in terms of reading speed when reading vowelized text at all

proficiency levels (Figure 4.24).

Consequently, it could be argued that participants who relied on an Arabic

vowelized textbook read both vowelized and un-vowelized text not only faster than those

who relied on the un-vowelized textbook, but also maintained a consistent performance at

all three proficiency levels. Upon comparing the results of word reading speed in the first

task (isolated words) with the results of the second task (texts), it can be seen that

learning Arabic with diacritics at an early stage might not only benefit learners in terms

of reading speed of individual words, but also in terms of the speed of reading entire

texts.

5.3.2   Reading Accuracy

This part of the task was designed to answer the third research question:

> **RQ 3**. Do diacritics play a role in reading accuracy for learners who rely on
>
> vowelized textbooks versus those who rely on un-vowelized textbooks at different
>
> stages of acquisition of Arabic as a second language?

In this part of the task, two main types of accuracy were considered: target word accuracy

and whole text accuracy. To obtain precise results that controlled for appropriate effected

factors, recall each text included carefully chosen target words. The choice of these target

words was subject to several criteria in terms of familiarity, suitability, and comparability

(see section 3.2.1 in the methodology chapter). Therefore, the particular target words were more controlled than the remaining words in each text. Target word accuracy was measured according to the two scales—general and detailed—that were used in the first task of isolated words recognition accuracy. The results obtained from the general and detailed scales revealed that both groups read vowelized target words more accurately than un-vowelized target words. This result is likewise comparable to the historical reason for the development of the Arabic writing system, which aimed to increase accuracy and comprehension during reading. It is also comparable to the results of several previous studies (Abu-Rabia, 1997, 1999; Seraye, 2004; Maroun & Hanley, 2017; Abu-Hamour, Al-Hmouz, & Kenana, 2013), which found that vowelized words are read more accurately than un-vowelized words by both poor and skilled native readers. The results of this part of task showed that the role of diacritics in reading accuracy in Arabic as an L1 is comparable to the role of diacritics in learning Arabic as an L2. From another point of view, this result can also be explained in light of the benefit of shallow orthography, which heavily depends upon phonological decoding, facilitates the reading process, and supports the process of word recognition in terms of effortless reading accuracy. In other words, vowelized target words in vowelized context is a shallow orthography in Arabic that reflects the "simple and consistent one-to-one correspondences between grapheme and phoneme" (Hansen, 2008 p. 22), which facilitates reading and increases the level of accuracy. Therefore, due to this feature of shallow orthography in representing the precise pronunciation of each letter in Arabic, the accuracy results of both groups supported the conclusion of that role by

demonstrating that the participants read vowelized words more accurately than un-vowelized words. In other words, un-vowelized words represent deep orthography in Arabic, forcing the reader to rely heavily on other components instead of phonological decoding (Hansen, 2008).

Regarding the comparison of the two groups of participants in terms of target word accuracy, the results obtained from the general scale indicated that the intermediate level of vowelized textbook participants read vowelized and un-vowelized texts significantly more accurately than their counterparts in the un-vowelized textbook group. Furthermore, the beginner and advanced levels of vowelized textbook participants maintained advantage in accuracy over their counterparts in the un-vowelized textbook group. Moreover, when taking the detailed measure of every short vowel in each word except for the last one into account, the results indicated that participants in the beginner and intermediate groups of the vowelized textbook read both vowelized and vowelized significantly more accurately than their counterparts in the un-vowelized textbook group. Furthermore, at the advanced level, the participants from the vowelized textbook group also maintained advantage in terms of target word accuracy over their counterparts in the un-vowelized textbook group.

These results corroborate the results yielded from the general scale as well as conclusion that including diacritics with Arabic text in textbooks could help improve learners' reading accuracy both with and without diacritics. Further, the results also confirmed the role of shallow orthography, which "makes the teaching of phonological recoding relatively straightforward and allows the acquisition of basic reading skills to

proceed at a faster pace" (Frith, Wimmer, & Landerl 1998, p. 32), an idea that is at variance with deep orthography, which is a more complex process that relies heavily on other components in addition to the phonological features of orthography (Frith, Wimmer, & Landerl, 1998; Goswami, Gombert, & de Barrera, 1998; Seymour, Aro, & Erskine, 2003; Hansen, 2008).

With respect to whole-text reading accuracy, the general scale was used to determine the whole accuracy of each vowelized and un-vowelized text to reveal the larger picture about the role of diacritics in the reading accuracy of a whole text containing either vowelized or un-vowelized words. Based on the results obtained from this scale, participants at the beginner and intermediate levels in both groups read the vowelized texts significantly more accurately than the un-vowelized texts, a result that was comparable with those of the task measuring accuracy of reading isolated words and with the task of reading target words in context. The results were also comparable to many previous studies that investigated this issue in Arabic as a first language (Abu-Rabia, 1997, 1999; Seraye, 2004; Maroun & Hanley, 2017; Abu-Hamour, Al-Hmouz, & Kenana, 2013).

Moreover, the results could be explained in light of the deep and shallow orthography theories, which refer to vowelized text carrying most of the phonological information of a word to assist in reading it more accurately. Thus, diacritics in vowelized text facilitate reading, because they illustrate the correct pronunciation of each word inside the text. This, again, is comparable to the intent behind the historical

development of adding diacritics to Arabic texts (Jum'ah, 1967; Framawi, 1978; Alhamad, 1982; Sharshal, 2000; Ismaeel, 2001; Alhassan, 2003).

In addition, the results of the task dealing with whole-text reading accuracy can be explained in terms of the facilitating role of diacritics, which assisted the participants in both groups, at all three proficiency levels, in reading the vowelized text accurately (Figure 4.36). By comparing the results of the vowelized textbook participants with the un-vowelized textbook participants, it can be noted that the vowelized textbook participants—especially those at the intermediate and advanced levels—read both vowelized and un-vowelized texts more accurately than the participants using the un-vowelized textbook. This level of accuracy may indicate that learning Arabic with diacritics from the early stages may play a role—in addition to other components, such as context—in improving the accuracy of reading texts under both vowelized and un-vowelized conditions.

However, it is worth mentioning here that many factors could affect the result of the whole-text accuracy, such as its length and level of difficulty. In this study, these factors were taken into account, based on many criteria (see section 3.2.2 in the methodology chapter). Moreover, the potential effect of the frequency of each word inside each text was reduced to ensure that most of the words in the text appeared only once (see Tables 3.8–3.14). This attempt to control for all of these factors might give a sign that the effect of appearance or absence of diacritics in these texts played the most prominent role in terms of reading accuracy of a whole text. However, other factors that could have affected the results were more difficult to control: for example, the frequency

of how often participants were exposed to each word in each text, as only the frequency of target words was controlled. In addition, it proved nearly impossible to control for participants' background knowledge of a topic that may have been covered in the texts. That is, a participant's familiarity with the subject matter of a text could inherently improve reading speed, accuracy and comprehension.

In summary, based on the results of the target word accuracy and whole-text accuracy tasks, it can be seen that participants who relied on a vowelized textbook in their learning program benefited from the presence of diacritics in the text. Moreover, using diacritics to learn Arabic from the earliest stages can assist with improving reading accuracy in both vowelized and un-vowelized conditions. Conversely, not including diacritics in textbooks could delay the acquisition of Arabic reading skills. Those participants who benefited from the use of diacritics demonstrated that changing Arabic text to shallow orthography assists with accelerating and enhancing reading performance.

5.3.3   Reading Comprehension

This part of the task was designed to answer the third research question:

> **RQ 4**. Do diacritics play a role in reading comprehension for learners who rely on vowelized textbooks versus those who rely on un-vowelized textbooks at different stages of acquisition of Arabic as a second language?

Several studies have attempted to examine the role of diacritics in terms of reading comprehension in Arabic as an L1 (Abu-Rabia, 1998, 1999, 2001; Abu-Rabia & Siegel,

1995; Seraye, 2004, Abu-Hamour, Al-Hmouz, & Kenana, 2013; Maroun & Hanley, 2017), and, in addition, other studies have examined the role of diacritics in learning Arabic as an L2 (Khaldieh, 2001; Hansen, 2010). However, most of these studies encountered difficulties in terms of designing tasks and controlling for the effect of certain factors related to reading comprehension, such as reader background, context, frequency of exposure to words, text difficulty and length, and other factors.

To avoid these limitations, the comprehension portion of this study, related to target word comprehension, asked participants to determine the correct meaning of each target word based on its occurrence in the text. The reason behind this task design element was the limited information available about participants' background knowledge pertaining to the topics of each text. That is, if a participant had background knowledge of the text's subject matter, he or she would likely demonstrate greater reading speed, accuracy, and comprehension. Focusing the participants on reading target words eliminated the potential limitation created by prior background knowledge.

The results demonstrated that participants at the beginner level comprehended vowelized target words in text significantly better than un-vowelized target words. The study of Abu-Rabia (1999), who investigated the effect of Arabic vowels on the reading comprehension of native Arabic children, reached the similar conclusion that vowels were a significant facilitator of reading comprehension. This study's results are also congruent to those of Abu-Hamoura, Al-Hmouz, and Kenanac (2013), who examined the effect of short vowelization on comprehension in Arabic as a first language. They found that diacritics were a facilitator of oral reading comprehension in poor readers. In terms

of Arabic as a second language, however, the findings of Hansen's (2010) study indicated that short vowels did not significantly facilitate reading comprehension for learners of Arabic as a second language.

While there was no significant difference in terms of reading comprehension under vowelized and un-vowelized conditions at the intermediate and advanced levels of both study groups, the results, nonetheless, indicated that target words in vowelized text were easier to comprehend than reading the same words in un-vowelized text. Likewise, in their study, Abu-Hamour, Al-Hmouz, and Kenana (2013) found that diacritics were a significant facilitator of reading comprehension for skilled readers as well. This was likely due to readers relying on as many elements as possible, such as diacritics, background knowledge and context, to assist with reading comprehension. The positive role of diacritics in comprehension aligns with the goal behind adding diacritics to Arabic script: avoiding mistakes in pronunciation and comprehension of Arabic words (Mahmoud, 1997; Ismaeel, 2001).

Although the results of comprehension did not reveal statistically significant differences between the vowelized and un-vowelized textbook participants, the results nonetheless demonstrated that the vowelized textbook participants had the advantage in terms of reading comprehension, under both vowelized and un-vowelized conditions, over the un-vowelized textbook group. This outperformance of the vowelized textbook participants was consistent with the results related to reading speed and accuracy in the first and second tasks.

Therefore, based on the above findings, an obvious advantage in reading speed, accuracy, and comprehension in both isolated words and text tasks can be observed among the participants who relied on the vowelized textbook. Furthermore, they achieved a high level of stability in their reading speed and accuracy in both vowelized and un-vowelized conditions, which supports the claim that shallow orthography (with diacritics) may assist readers with earlier achievement of reading fluency than deep orthography (without diacritics) (Frith, Wimmer, & Landerl, 1998). In other words, deep orthography, as used in the un-vowelized textbook, may pose a challenge to reading performance because this type of orthography contains more ambiguous orthographic-phonological relations than shallow orthography (Goswami, Gombert, & de Barrera, 1998). In turn, this difficulty may delay the progress of learning to read Arabic. Hence, further study of the two types of orthographies was worthwhile for detecting the effects of each type on word recognition and reading performance in Arabic as an L2, taking into account the goal behind the development of shallow Arabic orthography: to increase the degree of accuracy and comprehension. Employing the benefits of shallow orthography could open the door to enhancing teaching of Arabic as a second language.

5.4   Conclusion

In addition to combining the historical role of diacritics and their role in learning Arabic as an L1, this study provides evidence that diacritics play a positive role in terms of Arabic word recognition and reading performance. The study's results suggest that including diacritics in words or texts not only benefits the reader by removing ambiguity from the words, but it also positively influences improvement in reading performance in general. This conclusion can be observed in the stable reading performance of the participants who relied on vowelized textbooks in their learning program. These study participants could read Arabic text under both vowelized and un-vowelized conditions with an almost equivalent level of proficiency in terms of speed, accuracy, and comprehension. Moreover, they maintained an advantage over their study counterparts who relied on un-vowelized textbooks. These results were comparable to previous studies that corroborated the role of transparent orthography in facilitating and accelerating acquisition of reading skills.

The shallow orthography (with diacritics) of Arabic writing offers an advantage that facilitates the process of word recognition and reading and is a feature that should be considered when learning and teaching the language. The benefits of shallow orthography have been corroborated both in the historical period and in teaching Arabic as an L1. However, based on the available instructional materials, some practitioners of Arabic as a foreign language have expressed that textbooks should contain diacritics because of their utility in clarifying word pronunciation and meaning, while others hold that Arabic

textbooks should not contain diacritics because they could overwhelm learners who are already struggling with decoding the language.

As a result, the question has been raised whether diacritics play a different role in teaching Arabic as an L1 versus Arabic as an L2. Existing studies suggest that when Arabic is the L1, diacritics enhance the reading ability of both poor and skilled readers. When Arabic is the L2, however, this issue did not receive proper attention in Arabic L2 acquisition research. Only two studies are known to have dealt with this question, each from a different perspective. Khaldieh (2001) addressed this issue in terms of *ʔiʕrāb* "case endings", which focuses on diacritics as inflectional endings only. Meanwhile, Hansen (2010) investigated the role of short vowels with a narrow focus.

The present study was conducted while controlling for the effect of the input received by learners of Arabic as an L2. The tasks were designed with the intent of gaining clear understanding of the role of diacritics in terms of word recognition and the reading process (i.e., speed, accuracy, and comprehension). Clearly, on one hand, the study demonstrated that diacritics slowed down reading speed because they compel learners to focus intently on each word. On the other hand, the study results suggested that the participants who relied on vowelized textbooks in their learning program gained the additional advantage of being able to read both vowelized and un-vowelized words and texts. This result appears to indicate that learners who practiced with diacritics from the early stages of their learning improved their reading ability more readily than those who did not have the benefit of diacritics in their early learning.

5.5 Limitations

It was difficult to design comprehension tasks in regard to controlling the effects of certain reading comprehension factors, such as the readers' background knowledge pertaining to the texts' subjects. Namely, if a participant had background knowledge of a text's subject matter, he or she likely demonstrated greater reading comprehension based on his or her background knowledge of the text's subject than participants who did not have background knowledge about the text's subject. Due to both these factors and time limitations, the comprehension portion of this study was related to target-word comprehension and not whole-text comprehension. Participants were asked to determine the correct meaning of each target word based on its occurrence in each text. As these questions asked readers to determine the meanings of target words based on their contexts, the results may relate more to lexical comprehension that focuses only on words than whole-text comprehension. Therefore, further studies are needed that consider this issue and control the above factors.

Moreover, additional challenges arose in terms of the available number of participants, especially those in the advanced levels of both programs, because the total number of learners in the two programs was small. As a result, the number of participants who ultimately volunteered to participate in this study was even smaller. Therefore, future research should be conducted with a larger pool of participants.

5.6   Pedagogical Implications and Areas of Further Research

The implications of this study are relevant to four distinct groups: students, teachers, authors, and researchers in Arabic applied linguistics. For students, based on the results of this study and the inherent nature of Arabic, which contains word ambiguity when written without diacritics, more effort is required on their part to practice reading. Therefore, practicing reading with diacritics can eliminate ambiguity and accelerate learning. Moreover, practicing with diacritics can assist with developing reading proficiency at the text level, with or without diacritics. That is, practicing with diacritics increases students' ability to deal with both types of Arabic shallow and deep orthography. Furthermore, using diacritics—in addition to another component, such as context—to read and understand words and texts offers an advantage to students and facilitates the process of reading.

For teachers, offering diacritics with Arabic words and texts is a helpful strategy to solve the problem of pronunciation encountered by learners of Arabic as an L1. The results of this study suggest that participants who used a vowelized textbook achieved significant results in terms of reading accuracy, especially on the detailed scale, which considered each short vowel in the word. Indeed, diacritics may play a role in improving learners' pronunciation. Thus, this study may encourage teachers to select suitable activities, practices, homework assignments, and tests that take into account the role of diacritics. Teachers also would be wise to consider the effect of diacritics not only in the reading process, but in writing, which itself requires a separate investigation.

For authors of Arabic textbooks, this study suggests that the benefits of diacritics may extend beyond increasing the level of accuracy and comprehension to accelerating and enhancing the acquisition of the reading skill. Shallow orthography, based on the results of this study and studies in other languages, is considered a positive factor that assists learners with developing the reading. It is a worthwhile consideration when designing textbooks for Arabic language learners. Moreover, based on the results of this study authors of Arabic textbooks should consider the positive role of diacritics in pronunciation and supplying these diacritics to the words and texts in textbooks. However, the system by which diacritics are supplied in textbooks should also take into account the number and position of diacritics so that they are appropriate for each proficiency level and do not result in overwhelming learners with excessive decoding.

Finally, for researchers, it is critical to understand that the two orthographies of the Arabic language can affect the process of word recognition and reading. This topic should be investigated more deeply, especially in terms of Arabic as a second language. Many studies of different languages, such as English, French, Spanish, German, and other European languages have suggested that orthography has an effect on the process of reading acquisition. Arabic and other languages that have both deep and shallow orthography would benefit from deeper examination, especially in terms of the effect of the two types of orthography on learning Arabic as a second language. Moreover, further research needs to be done on how the two types of orthographies interact with explicit and implicit learning.

It is hoped that this study might lay the groundwork for future research that investigates the same issue with a larger number of participants. This type of study could also be conducted as a case study including a fewer number of participants and following up on their learning for an extended period of time such as in a longitudinal setting.

Moreover, each part of this study could be examined separately to lend greater focus and explore each task more deeply, especially as it relates to reading comprehension and/or text type. The comprehension skill, in particular, requires more focus because of the number of factors that must be considered when designing tasks and selecting participants (e.g., understanding their background knowledge and controlling for the suitability of the length and difficulty of texts). Finally, the role of diacritics in learning the Arabic language can be examined in terms of other language skills, such as writing, which could expand the understanding of the role of diacritics in writing skill which could give rise to other important, related issues.

APPENDIXES

Appendix 1 Manuscript page of Holy Qur'an using black ink (without dots and diacritics)
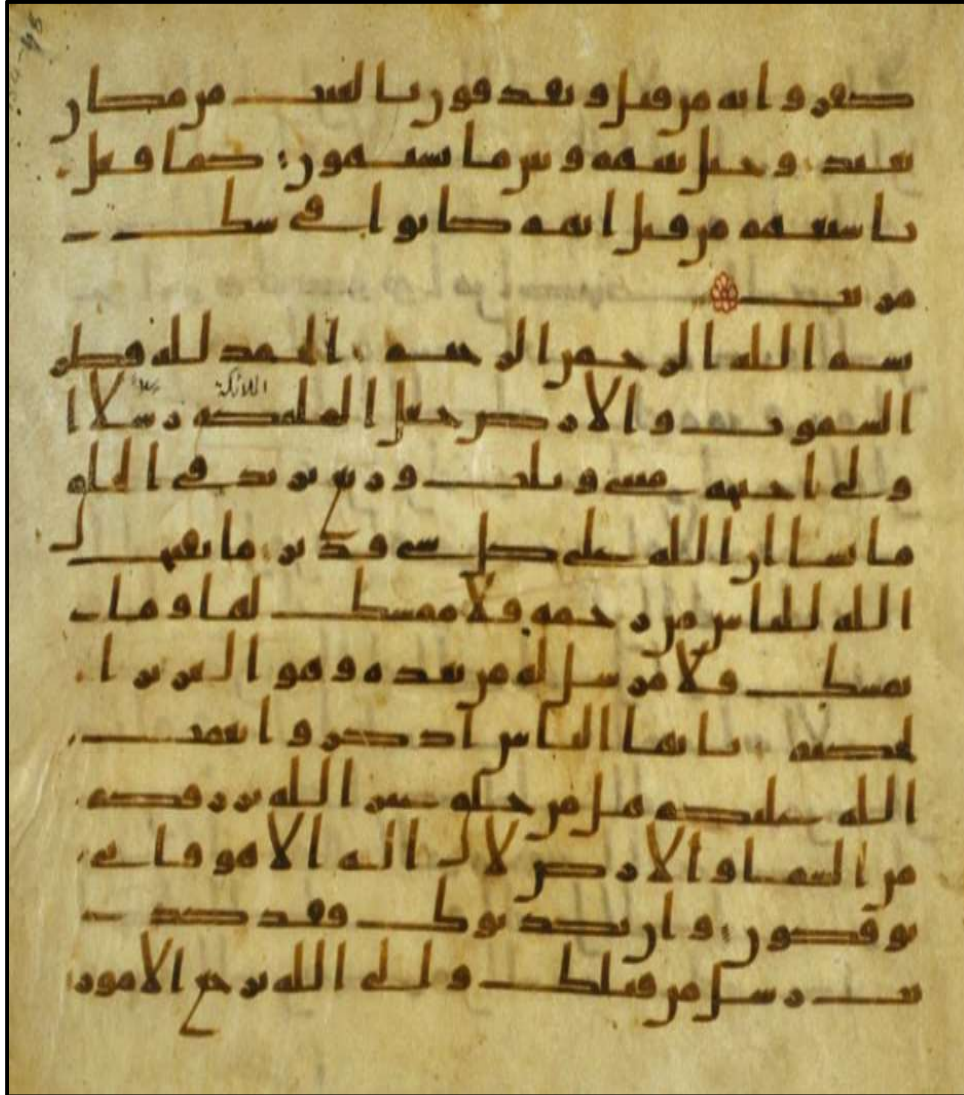
* Manuscript page of the Holy Qur'an using black ink without *naqt^c* [Digital image]. (n.d.). Retrieved January 1, 2018, from https://www.wdl.org/en/item/2491/view/1/1/

Appendix 2 Manuscript page of Holy Qur'an using red dots (Naqtˤ ʔal-ʔiʕrāb)*

*Manuscript page of the Holy Qur'an using red dots (*naqtˤ ʔal-ʔiʕrāb*) (*Suratu Al-Takwir*) [Digital image]. (n.d.). Retrieved January 1, 2018, from
https://www.wdl.org/en/item/6985/view/1/1/

Appendix 3 Manuscript page of Holy Qur'an using red and black dots *(Naqtˤ ʔal-ʔiˤrāb and ʔal-ʔiˤdʒām)**

*Manuscript page of the Holy Qur'an using red and black dots (*Suratu al-Kahf*) [Digital image]. (n.d.). Retrieved January 1, 2018, from https://www.wdl.org/en/item/6891/view/1/1/

Appendix 4 Manuscript page of Holy Qur'an using black ink *(ʔaʃʃakl* "Diacritics") *
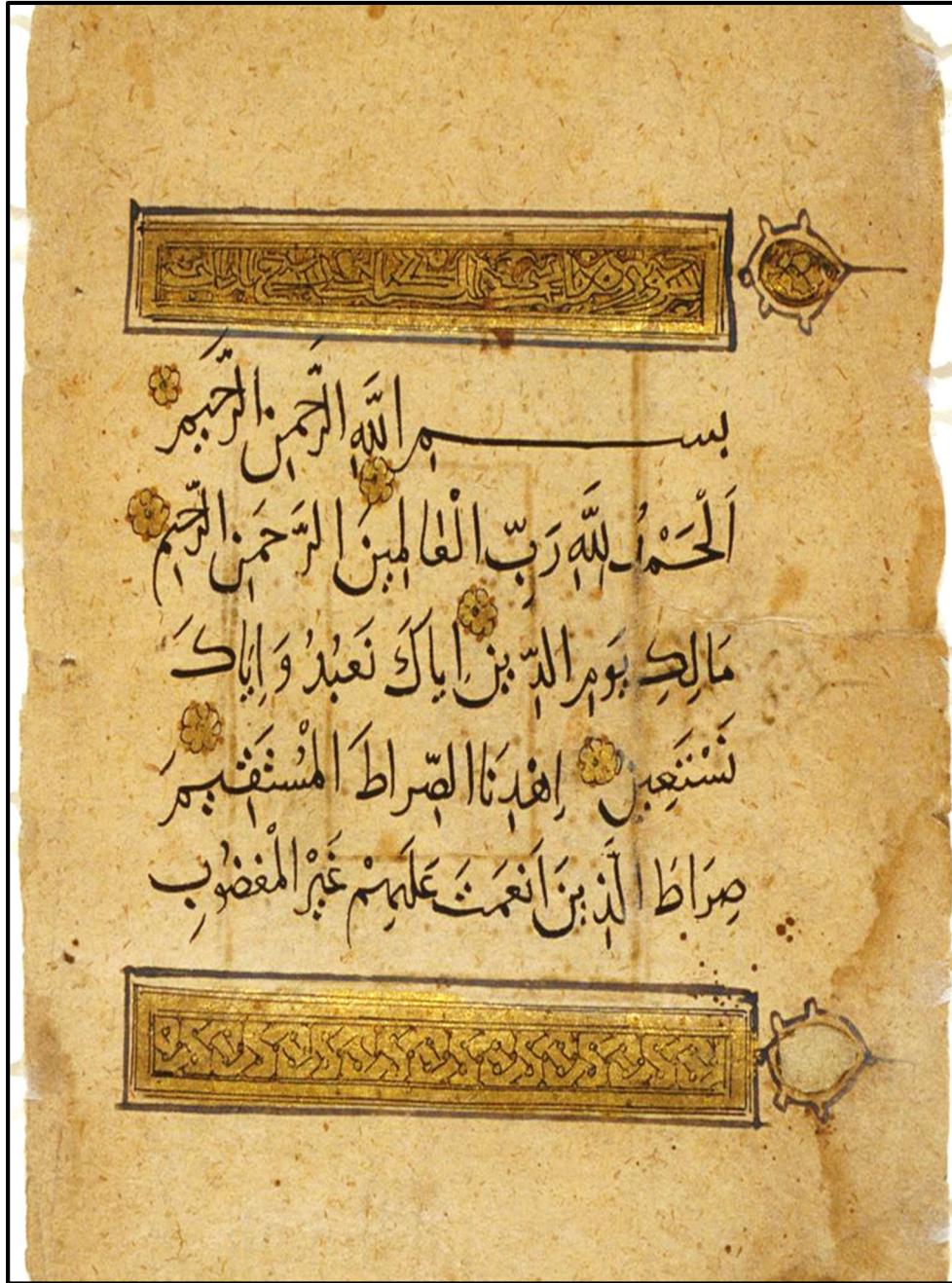
*Manuscript page of the Holy Quran with diacritics Taškīl using black ink
(*Surtu al-Fatihah*) [Digital image]. (n.d.). Retrieved January 1, 2018, from
https://www.wdl.org/en/item/6812/view/1/1/

Appendix 5 Sample from the third grade textbook: Saudi Arabia

الدرس
١

عَادِلٌ فِي الطَّائِرَةِ

دَخَلَ الْوَالِدُ حَامِلًا فِي يَدِهِ تَذَاكِرَ السَّفَرِ، فَاسْتَقْبَلَتْهُ الْأُسْرَةُ بِفَرَحٍ، وَأَسْرَعَ الْجَمِيعُ لِتَجْهِيزِ حَقَائِبِهِمُ الْكَبِيرَةِ اسْتِعْدَادًا لِلرِّحْلَةِ إِلَّا عَادِلًا اكْتَفَى بِحَقِيبَةٍ يَدَوِيَّةٍ صَغِيرَةٍ.

وَقَبْلَ مَوْعِدِ الرِّحْلَةِ وَصَلَتِ الْأُسْرَةُ إِلَى الْمَطَارِ، وَاسْتَقَرَّ أَفْرَادُهَا عَلَى الْمَقَاعِدِ فِي صَالَةِ الِانْتِظَارِ كَغَيْرِهِمْ مِنَ الْمُسَافِرِينَ، غَيْرَ امْرَأَةٍ كَانَتْ تَحْمِلُ طِفْلًا لَمْ تَجِدْ مَكَانًا تَجْلِسُ فِيهِ.

رَآهَا عَادِلٌ فَقَامَ عَنْ مَقْعَدِهِ وَأَجْلَسَهَا، وَوَقَفَ يَتَأَمَّلُ الْمُسَافِرِينَ وَيَسْتَمْتِعُ بِحَرَكَتِهِمْ حَتَّى سَمِعَ النِّدَاءَ لِصُعُودِ الطَّائِرَةِ.

١٤

أُنْجِزُ مَشْروعي

لُعْبَةُ الوقايةِ مِنَ الأمْراضِ

١) هذه لُعْبَةٌ مُفيدةٌ ومُسَلِّيةٌ ، يُمْكِنُني أَنْ أَلْعَبَها مَعَ مَنْ بِجِواري .
أَقْرَأُ التَّعْليماتِ بِهُدوءٍ وانْتِباهٍ ، ثُمَّ أُنَفِّذُ المَطلوبَ .
إذا عَرَفْتُ اللَّعِبَ بها أكونُ قَدْ فَهِمْتُ " التَّعْليماتِ " .

الأدواتُ:
◄ ورقٌ مُقَوًّى .
◄ ألوانٌ .
◄ مِقَصٌّ .

خُطُواتُ التَّنْفيذِ
• أَقُصُّ دوائرَ صغيرةً مِنَ الورقِ المُقَوَّى ، وأُلَوِّنُ كُلَّ دائرةٍ بِلَوْنٍ مُخْتَلِفٍ .
• يَخْتارُ كُلُّ لاعبٍ لِنَفْسِهِ دائرةً .
• أَقْطَعُ مُسْتطيلاً مِنَ الورقِ المُقَوَّى أيضًا إلى (٦) مُرَبَّعاتٍ كَما في الرَّسْمِ، و أُرَقِّمُها مِنْ (١ – ٦)
• أَقْلِبُ المُرَبَّعاتِ إلى قَفاها ، ويَخْتارُ كُلُّ لاعبٍ مُرَبَّعًا وَيَكْشِفُهُ .

٣	٢	١
٦	٥	٤

• مَنْ يَكْشِفُ الرَّقْمَ الأكبرَ هو الذي يَبْدَأُ اللَّعِبَ .
• يَكْشِفُ اللاعبُ الأَوَّلُ مُرَبَّعًا .
• يَنْقُلُ دائرَتَهُ بِقَدْرِ الرَّقْمِ الذي كَشَفَهُ .
• يَتْبَعُهُ الباقونَ بالطريقةِ نَفْسِها .
• الفائزُ هوَ الذي يَصِلُ إلى الرَّقْمِ (٣٤) قبلَ غَيْرِهِ .

١٠

Appendix 7 Sample from the secondary school textbook: Saudi Arabia

اقرأ ، ثم لخص خصائص النص الأدبي : (منزلي)

طبيعة النص الأدبي   (للناقد السوري ـ محمد راتب النابلسي)

لتوضيح طبيعة النص الأدبي وخصائصه، سوف نستخدم منهج الموازنة؛ لأنه بضدّها تتميز الأشياء. إليكم في البدء نصاً علمياً جمعت فقراته من كتاب «الكون العجيب» لقدري حافظ طوقان، وينطوي هذا النص على بعض الحقائق المتعلقة بالشمس :

" الشمس نجم متوسط الحجم، إذا قيست بالشموس الأخرى، ومع أنها تكبر الأرض بمليون وثلاث مئة ألف مرة، وتبعد عنها مئة وخمسين مليون كيلو متر، فهناك نجوم يزيد حجم أحدها عن حجم الشمس والأرض والمسافة بينهما، وأما عن حرارتها فهي تصل إلى عشرين مليون درجة مئوية في مركزها، فلو ألقيت الأرض في جوف الشمس لتبخرت في زمن قصير، وتنتج الشمس من الطاقة مايعادل إحراق ألفي مليار طن من الفحم الحجري، وتفقد الشمس كل يوم من كتلتها ما يعادل ثلاث مئة وستين ألف مليون طن، ولو انطفأت حمأة الشمس لغرقت الأرض في ظلام دامس، ولهبطت درجة الحرارة فيها إلى مئتين وسبعين درجة تحت الصفر.. وانعدام الدفء والنور، كافيان لقتل كل مظهر من مظاهر الحياة على سطح الأرض، وتحويل الأرض إلى قبر جليدي هائل ".

وإليكم الآن نصاً آخر في الموضوع نفسه ، ولكنه ذو طابع أدبي . النص لأمير الشعراء أحمد شوقي:

" سَل الشمس من رفعها فوق ناراً، ونصبها منارا؟ ومن علقها في الجو ساعة، يدب عقرباها إلى قيام الساعة ؟ ومن الذي آتاها معراجها، وهداها إدراجها، وأحلها أبراجها، ونقل في سماء الدنيا سراجها؟ الزمان هي سبب حصوله، ومتشعب فروعه وأصوله، وكتابه بأجزائه وفصوله، ولد على ظهرها، ولعب في حجرها، وشاب في طاعتها وبرّها، لولاها ما اتسقت أيامه، ولا انتظمت شهوره وأعوامه، ولا اختلف نوره وظلامه، ذهبَ الأصيل من مناجمها، والشفق يسيل من محاجمها، تحطمت القرون على قرنها، ولم يعل تطاول السنين بسنها، ولم يمح التقادم لمحة حسنها".

. النص العلمي يقدم لنا حقائق علمية نجهلها ، فقد عرفنا من خلاله بُعد الشمس عن الأرض ، وحجم الشمس بالنسبة إلى الأرض : ودرجة حرارة مركزها ... والطاقة الحرارية التي تشعها . والكتلة التي تفقدها ، والآثار المترتبة عن انطفائها ..

. بينما النص الأدبي يحرك مشاعرنا ، من دون أن يضيف إلى الحقائق التي نعرفها حقائق جديدة ..

. النص العلمي يقدم لنا الحقائق ، المدعمة بالأدلة والبراهين والتجارب ، والإحصاءات ، بحيث تتوافق مع مبادئ العقل ، دون أن يتدخل بمشاعرنا .

. والنص الأدبي يُحدث فينا "موقفًا" لأنه يعتمد على تحريك المشاعر ، مشاعر المحبة أو الكراهية ، ومشاعر الإجلال أو الازدراء، ولا يخفى ما للمشاعر من أثر كبير في سلوك الإنسان ، وربما كان عامل الشعور أبلغ في توجيه السلوك من عامل القناعة ، لذلك يُعد الأسلوب العلمي هو القالب المناسب للأفكار ، ويُعد الأسلوب الأدبي هو القالب المناسب للمشاعر.

Appendix 8 Sample from the secondary school textbook: Saudi Arabia- Lesson of active/passive voice

نشاطات التعلم

١ رقِّم تسلسليًا الأفعال المبنية للمعلوم :

( ) يَأْخُذُ   ( ) فُهِمَ   ( ) سَلَّمَ   ( ) يَذهَبُ   ( ) كُسِرَ

( ) يُنصَرُ   ( ) ظُلِمَ   ( ) عَلِمَ   ( ) يَشرَحُ   ( ) يُرسَلُ

٢ لاحِظ وتعلم :

أفعال مبنية للمجهول	أفعال مبنية للمعلوم
لُوحِظ	لاحَظ
صِيم	صَام
شُوهِدَ	شَاهَد

أفعال مبنية للمجهول	أفعال مبنية للمعلوم
يُفهَمُ	يَفهَمُ
يُعطى	يُعطي
يُقَاتَلُ	يُقَاتِلُ

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Appendix 9 Sample from the fifth grade textbook: Syria

اقرأ

التَّعاوُنُ

١- يعيشُ النّاسُ في حالِ اجتماعٍ   فتحدُثُ بينَهُـمْ طُـرُقُ انتفـاعِ

٢- وتكثُـرُ للتَّـعـاوُنِ والتَّفـادي   على الأيّـامِ بينَهُمْ الـدَّواعي   (التَّضحية) (الأسباب)

*   *   *

٣- يسانِدُ بعضُهُمْ في العَيْشِ بَعْضاً   مُسـانَدَةَ ارتفاعٍ وانْتِفـاعِ

٤- قدِ اشْـتبَكَتْ مصالحُهم، فكلٌّ   لكلٍّ في مجالِ العيشِ سـاعِ

٥- فَتَعْلو في ديارِهِـمُ المَبانى   وتَخصِبُ في بلادِهِمُ المَراعي

٦- وَتسْـتَعلي الحياةُ بهمْ فتُمْسي   مِنَ العَيْشِ الرَّغـيدِ على يَفاعٍ   (الرَّفيعُ السّامي)

*   *   *

٧- بذاكَ قَضى اجتماعُ النّاسِ لمّا   أنِ اعتَصمـوا بحَبْلِ الاجتماعِ

٨- و مـا مَدَنيَّةُ الأقْـــوامِ إلاَّ   تَعاوُنُهـمْ على غُـرِّ المساعي   (حضارة) (الأعمال النبيلة)

*   *   *

معروف الرصافي

المجموعة الكاملة دار العودة / بيروت

معروف الرَّصافي: شاعرٌ عراقيٌّ، وُلدَ عامَ ١٨٧٥ وتوفيَ عامَ ١٩٤٥، له آثارٌ عِدَّةٌ منها ديوانُ شعرٍ مطبوع.

العربيّة لُغتي   ٤١

تقريرٌ شفويٌّ عن زيارةِ عدنانَ

السَّيَدُ المرشدُ الاجتماعيَّ

بتاريخ ٢٠١٠/١٠/١٠

ذهبْتُ معَ مجموعةٍ من رفاقي في الصَّفِّ الثّامنِ إلى المستشفى الوطنيّ الكائنِ في وَسطِ المدينةِ لزيارةِ رفيقِنا عدنانَ الَّذي تعرّضَ لوَعكةٍ صِحيّةٍ نُقِلَ في إثرِها إلى هناك.

صعِدْنا إلى الطّابقِ الثّالثِ، ودخلْنا الغرفةَ رقم (١٣)، كانَ عدنانُ مُستلقياً على سريرٍ أبيضَ، وإلى جانبِه والدُهُ الذي استقبلَنا ورحَّبَ بنا. سألْنا عدنانَ عن وضعِهِ الصِّحّيّ، فأَكَّدَ لنا أنَّهُ بخيرٍ، وسيخرُجُ عمّا قريبٍ إنْ شاء الله.

ثمَّ تبادلْنا الأحاديثَ عن أحوالِ المدرسةِ والدّروسِ التي تعلَّمناها في أثناءِ غيابِه، فاقترَحْنا أنْ نتقاسمَ هذهِ الدّروسَ لنشرحَها له. وبعدَ ذلكَ تمنّينا له الشَّفاءَ العاجلَ والعودةَ إلى المدرسةِ بخَيرٍ وسلامةٍ، وغادرْنا المستشفى ونحنُ نشعرُ بالسّعادةِ والاطمئنانِ.

حسّان ٢٠١٠/١٠/١٠

أ

١- ما موضوعُ التَّقريرِ السَّابقِ؟ ولِمَنْ قُدِّمَ؟

٢- ما المعلوماتُ التي تضمَّنَها التَّقريرُ؟

٣- مَن أعدَّ التَّقريرَ؟

تعلَّمْ

التَّقرير: نوعٌ من أنواعِ التَّعبيرِ الوظيفيّ (الكتابيّ والشَّفويّ)، هدفُهُ تقديمُ قَدْرٍ من المعلوماتِ والحقائقِ عنْ زيارةٍ أو رحلةٍ أو كتابٍ، ويُعِدُّهُ فردٌ، أو مجموعةُ أفرادٍ لصالحِ جهةٍ معيّنةٍ بأسلوبٍ موضوعيّ.

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الدَّرسُ الثاني: نصٌّ أدبيٌّ   مرارةُ أبٍ

أميّةُ بنْ أبي الصَّلت

الشّاعرُ والعصرُ

في عصرٍ ازدهرتْ فيه التّجارةُ من الحجاز إلى الشّام وإلى اليمن، وفَرَضَ واقعُ الحياة الاجتماعيّةِ في عصر ما قبلَ الإسلام موضوعاتٍ ارتقى بها الشّعرُ الغنائيُّ إلى العالميّةِ لما فيها من تعبيرٍ عن تجاربَ إنسانيّةٍ ومعاناةٍ وجدانيّةٍ ذاتيّةٍ يتلمّسها الآخرون.

وأميّةُ بنْ أبي الصَّلت واحدٌ من هؤلاء عُرف باطّلاعـه علـى اليهوديّـةِ والمسـيحيّةِ والثَّقافاتِ الدّينيّةِ الأخرى التي كانت سائدةً. وهو شاعرٌ مخضرمٌ، كانت له تأمُّلاتُه نتيجةَ اطّلاعِه وسعةِ ثقافتِهِ؛ أدركَ الإسلامَ ولم يُسلم. قال الغزلَ، ثمّ تنسّكَ في كهولتِهِ، وطَمَحَ إلى النُّبوّةَ ، ويُعَدُّ شعرُهُ منَ الطّبقةِ الأولى. له ديوانُ شعرٍ جاء مرتّباً بحسب الحُروفِ الهجائيّةِ.

الشّاعرُ والقصيدةُ

رسمَ الشّاعرُ صورةً حيّةً تُعَبِّرُ عن حالةٍ اجتماعيّةٍ، قد تظهرُ حيناً بعدَ حين، وهي عقوقُ الأبناء، ورميُهُمْ – عَنْ جهالةٍ – آباءَهُمْ بالحُمقِ والخَرَفِ، مع أنَّ الآباءَ لايقابلونَ ذلـكَ بغيـر الإشفاق دون أنْ يقسوَ منهم قلبٌ أو لسانٌ، ولهذا تحدّثَ أميّةُ بأبياتٍ ما يزالُ يقولُها كلُّ شـيخٍ إنْ رماهُ الزَّمنُ بالولدِ العاقِّ.

النَّصُّ   مرارةُ أبٍ[1]

١– غَذَوْتُـكَ مـولوداً وعُلْتُكَ يافعـاً	تُعَلُّ بمـا أُدْني إليـكَ وتَنْـهَــلُ
٢– إذا ليلةٌ نابَتْـكَ بـالشَّكو لـم أبِتْ	لشكـواكَ إلاّ سـاهراً أتَمَلْـمَلُ
٣– كـأنّي أنـا المَطروقُ دونَكَ بالّـذي	طُرقْتَ بـهِ دوني فعيناي تَهْمُلُ
٤– تخافُ الرّدى نفسي عليكَ وإنّـها	لَتَعْلَـمُ أنَّ الموتَ حتمٌ مـؤجّـلُ
٠٠٠٠٠٠٠	٠٠٠٠٠٠٠
٥– فلمّـا بَلَغْتَ السِّنَّ والـغـاية الّـتي	إليها مـدَى ماكنْتَ فيك أوَمّـلُ
٦– جَعلْتَ جزائي منـك جَبْهاً وغِلْـظةً	كـأنَّكَ أنتَ الـمُنْعِمُ المُتَفضّـلُ

[1] ديوان أميّة بن أبي الصَّلْت، ص:٤٣٠، جمعٌ وتحقيقٌ ودراسةٌ د.عبد الحفيظ السّطلي، الطبعة الثالثة، المطبعة التّعاونيّة بدمشق.

الوحدةُ الأولى

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الوحدةُ السّابعةُ: حركةُ التّجديدِ في الأدبِ العربيّ

الدَّرسُ الرّابعُ : نصٌّ أدبيٌّ.

مدينةُ السَّعَادَةِ[1]

مصطفى لطفي المنفلوطي ١٨٧٦– ١٩٢٤م

الكاتبُ والعصرُ

مصطفى لطفي المنفلوطي: كاتبٌ من مصرَ العربيَّةِ، وُلِدَ في مَنفلوطَ في عصرٍ كانتِ البلادُ ترزَحُ تحت وطأةِ الاحتلالِ الإنكليزيِّ، فشهد مافيه من شرورٍ وظلمٍ وقتالٍ، ومحاولاتٍ لطمسِ التّراثِ العربيِّ، وإضعافِ للّغةِ، فراح يعبّرُ عن قضايا عصريّةٍ حديثةٍ متمسّكاً بلغتِه وتراثِه كغيره من أدباءِ عصرِه.

تلقَّـى علومَـهُ على يَدِ شيوخِ الأزهرِ، وذاعتْ شهرتُهُ بفضلِ رواياتِه المُترجمةِ عن الأدبِ الفرنسيِّ، وقد عرَّبها بتصرفٍ كبيرٍ.

من أهمِّ أعمالِه: الفَضيلةُ، في سبيلِ التّاجِ ، ولَهُ أيضاً: النَّظراتُ، ويشتملُ مقالاتٍ عِدَّةً تتناولُ الأدبَ والفنَّ والسّياسةَ والاجتماعَ، وهذا النّصُّ مُستمَدٌّ منهُ.

الكاتبُ والنّصُّ

صُدِم الكاتبُ بالواقعِ الأليمِ في مجتمعِه، وما فيه من شرورٍ وظلمٍ وقتالِ النّاسِ بعضِهـم بعضاً على المكاسبِ والأموالِ، وتهافتِهم على الرّبحِ والغنائمِ، وسيطرةِ القويِّ على الضّـعيفِ، وغلبةِ الجهلِ على العلمِ وإقفارِ القلوبِ من الرّحمةِ......فأحسَّ الخطرَ العظيمَ، ولـم يسـتطعْ أن تمالك نفسَه، فأخذ يكتُبُ إثرَ المقالِ، كما يتنفّسُ الحزينُ أو يئنُّ.

وقف المنفلوطيُّ متأمّلاً، والألمُ المُمضُّ يتفاعلُ في أعماقِه أمامَ ما يشاهدُهُ مـن مفاسـدَ وانحلالٍ آنذاكَ، فعاهدَ نفسَه على حملِ رسالةِ الإصلاحِ ورفعِ رايتِها، وانبرَى بأُسلوبِه الـرّزينِ العميقِ يعالجُ هذه الأمراضَ الّتي تنخَرُ في مجتمعِه بعنفٍ وقسوةٍ، ودعَا الشّبابَ إلى الحياةِ المُثلى الّتي تكفُلُ لهم العيشَ الكريمَ، وتجعلُ منهم دعائمَ ومداميكَ متينةً لمستقبلٍ مُشرقٍ.

المنفلوطي: النّظرات[1]

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Appendix 13 Sample from the elementary school textbook: Morocco

أَقْطِفُ الْبُرْتُقَالَ

صالح : أَنْتَ هُنَا وَأَنَا أَبْحَثُ عَنْكَ.

فريد : أَنَا أَقْطِفُ الْبُرْتُقَالَ.

صالح : اِنْزِلْ، لَقَدْ أَظْلَمَ اللَّيْلُ.

فريد : حَتَّى أَمْلَأَ هَذِهِ السَّلَّةَ.

صالح : أُرِيدُ أَنْ آكُلَ الْبُرْتُقَالَ.

فريد : كُلْ وَاحِدَةً فَقَطْ.

صالح : "اِمْ" هِيَ لَذِيذَةٌ، أُرِيدُ وَاحِدَةً أُخْرَى.

3

Appendix 14 Sample from the middle school textbook: Morocco

حـــسن المعاشرة

كُنْ أَيُّهَا العَاقِلُ مُقْبِلًا عَلَى شَأْنِكَ، رَاضِياً عَلَى زَمَانِكَ، سِلْماً لِأَهْلِ دَهْرِكَ، جَارِياً عَلَى عَادَةِ عَصْرِكَ، مُنْقَاداً لِمَنْ قَدَّمَهُ النَّاسُ عَلَيْكَ، مُتَحَنِّناً عَلَى مَنْ قَدَّمَكَ النَّاسُ عَلَيْهِ، وَلَا تُبَايِنْهُمْ بِالعُزْلَةِ عَنْهُمْ فَيَمْقُتُوكَ، وَلَا تُجَاهِرْهُمْ بِالمُخَالَفَةِ لَهُمْ فَيُعَادُوكَ، فَإِنَّهُ لَا عِيشَةَ لِمَمْقُوتٍ وَلَا رَاحَةَ لِمُعَادًى، وَاجْعَلْ نُصْحَ نَفْسِكَ غَنِيمَةَ عَقْلِكَ، وَلَا تُدَاهِنْهَا بِإِخْفَاءِ عَيْبِكَ، وَإِظْهَارِ عُذْرِكَ، فَيَصِيرُ عَدُوُّكَ أَحْظَى مِنْكَ فِي زَجْرِ نَفْسِهِ، فَقَدْ قَالَ بَعْضُ البُلَغَاءِ : مَنْ أَصْلَحَ نَفْسَهُ أَرْغَمَ أَنْفَ أَعَادِيهِ، وَمَنْ لَمْ يَكُنْ لَهُ مِنْ نَفْسِهِ وَاعِظٌ لَمْ تَنْفَعْهُ المَوَاعِظُ.

المارودي المتوفى سنة 450 هـ

١) تَأَمَّلْ كَلِمَتَيْ (مُقْبِلًا) و (رَاضِياً) فِي قَوْلِ المَارُودِي : كُنْ أَيُّهَا العَاقِلُ مُقْبِلًا عَلَى شَأْنِكَ، رَاضِياً عَلَى زَمَانِكَ، تَجِدْهُمَا اسْمَيْنِ مُشْتَقَّيْنِ يَدُلَّانِ عَلَى شَيْئَيْنِ مُتَمَيِّزَيْنِ : الأَوَّلُ : المَعْنَى الحَادِثُ الَّذِي تُؤَدِّيهِ الكَلِمَتَانِ وَهُوَ الإِقْبَالُ وَالرِّضَى. الثَّانِي : الذَّاتُ الَّتِي قَامَتْ بِتَأْدِيَةِ تِلْكَ المَعْنَى. وَمِنْ هُنَاكَ كَانَ اسْمُ الفَاعِلِ اسْماً مُشْتَقّاً يَدُلُّ عَلَى المَعْنَى الحَادِثِ وَعَلَى فَاعِلِهِ.

٢) وَتَأَمَّلْ مَرَّةً ثَانِيَةً كَلِمَتَيْ (رَاضِياً) و (مُقْبِلاً)، وَحَاوِلْ أَنْ تَتَعَرَّفَ عَلَى فِعْلِهِمَا المَاضِي، وَهَلْ هُوَ مِنَ الأَفْعَالِ الثَّلَاثِيَّةِ أَوِ الرُّبَاعِيَّةِ، فَإِنَّكَ وَلَا شَكَّ سَتَجِدُ أَنَّ فِعْلَ (رَاضِياً) هُوَ رَضِيَ الثُّلَاثِي. وَأَنَّ فِعْلَ (مُقْبِلًا) هُوَ أَقْبَلَ الرُّبَاعِي، وَكِلاهُمَا مُتَصَرِّفٌ، وَلَا يَدُلُّ مَصْدَرُهُ عَلَى الدَّوَامِ.

وَبِالتَّأَمُّلِ مَرَّةً ثَانِيَةً فِي مِيزَانِهِمَا الصَّرْفِي تَجِدُ أَنَّ كَلِمَةَ (رَاضِياً) أَتَتْ عَلَى وَزْنِ (فَاعِلًا)، وَمِنْ هُنَاكَ تُدْرِكُ أَنَّ اسْمَ الفَاعِلِ يُصَاغُ مِنَ الثُّلَاثِي عَلَى وَزْنِ «فَاعِل»، وَأَنَّهُ مِنْ غَيْرِ الثُّلَاثِي عَلَى وَزْنِ المُضَارِعِ (يُقْبِل) مَعَ ابْدَالِ حَرْفِ المُضَارَعَةِ مِيماً مَضْمُومَةً وَكَسْرِ مَا قَبْلَ الآخِرِ : (مُقْبِل).

أَيْنَ ٱلْمَفْعُولُ ٱلْمُطْلَقُ في هَذِهِ ٱلْجُمَلِ ؟ ما عَلاقَةُ " كَرِهَ " بِ " بُغْضاً " ؟ ما عَلاقَةُ " قَعَدَ " بِ " ٱلْقُرْفُصاءِ " وَ " رَشَفْتُ بِ " رَصاصَةً " ؟ أَيْنَ فِعْلُ " صَبْراً " ؟ إذاً ما ٱلَّذي نابَ عَنِ ٱلْمَصْدَرِ في ٱلْمَفْعُولِيَّةِ ٱلْمُطْلَقَةِ في هَذِهِ ٱلْجُمَلِ ؟

يَنُوبُ عَنِ ٱلْمَصْدَرِ كَذَلِكَ في ٱلْمَفْعُولِيَّةِ ٱلْمُطْلَقَةِ : مُرادِفُهُ، نَوْعُهُ، آلَتُهُ، وَقَدْ يُحْذَفُ فِعْلُ ٱلْمَفْعُولِ ٱلْمُطْلَقِ إذا وُجِدَ ما يَدُلُّ عَلَيْهِ.

إِسْتِنْتاجٌ :

ٱلْمَفْعُولُ ٱلْمُطْلَقُ مَصْدَرٌ مَنْصُوبٌ يُذْكَرُ بَعْدَ فِعْلٍ مِنْ لَفْظِهِ.
يُؤْتَى بِهِ لِتَأْكيدِ ٱلْفِعْلِ أَوْ بَيانِ نَوْعِهِ أَوْ عَدَدِهِ .
يَنُوبُ عَنِ ٱلْمَصْدَرِ في ٱلْمَفْعُولِيَّةِ ٱلْمُطْلَقَةِ : مُرادِفُهُ، صِفَتُهُ، آلَتُهُ، عَدَدُهُ، كُلُّ أَوْ بَعْضُ مُضافَيْنِ إلى ٱلْمَصْدَرِ، ضَميرُهُ ٱلْعائِدُ عَلَيْهِ.
وَقَدْ يُحْذَفُ ٱلْفِعْلُ وَيَبْقَى ٱلْمَصْدَرُ مَفْعُولاً مُطْلَقاً لِذَلِكَ ٱلْفِعْلِ ٱلْمَحْذُوفِ.

أَسْتَفيدُ :

- يُبَيِّنُ ٱلْمَفْعُولُ ٱلْمُطْلَقُ نَوْعَ ٱلْفِعْلِ إذا كانَ مُضافاً أَوْ مَوْصوفاً.
- يَنُوبُ عَنِ ٱلْمَصْدَرِ كَذَلِكَ في ٱلْمَفْعُولِيَّةِ ٱلْمُطْلَقَةِ : اسْمُ ٱلْمَصْدَرِ : كَلَّمْتُكَ كَلاماً.
الإشارَةُ إلى ٱلْمَفْعُولِ ٱلْمُطْلَقِ : ناضَلْتُ ذَلِكَ (أَيْ ناضَلْتُ ذَلِكَ ٱلنِّضالَ).
يُعْرَبُ ٱلْمَصْدَرُ ٱلْمَنْصُوبُ مَفْعُولاً مُطْلَقاً بَعْدَ : مُشْتَقٍّ : رَأَيْتُهُ مُسْرِعاً إِسْراعاً مُفْرِطاً.
وبعد : مَصْدَرٍ : ﴿ وَإِنْ عَاقَبْتُمْ فَعَاقِبُوا بِمِثْلِ مَا عُوقِبْتُم بِهِ ﴾ سُورَةُ الإسْراءِ : آيَة 63

أُطَبِّقُ :

- حَدِّدِ ٱلْمَفْعُولَ ٱلْمُطْلَقَ في ما يَلي :
﴿ وَاذْكُرُوا اللَّهَ كَثِيرًا ﴾ سُورَةُ الأنْفالِ : آيَة 45
﴿ فَإِنِّي أُعَذِّبُهُ عَذَابًا لَّا أُعَذِّبُهُ أَحَدًا ﴾ سُورَةُ الْمائِدَةِ : آيَة 115
﴿ فَلَا تَمِيلُوا كُلَّ الْمَيْلِ ﴾ سُورَةُ النِّساءِ : آيَة 129
« حَمْداً لِلَّهِ وَشُكْراً ».
- رَكِّبْ جُمَلاً نابَ فيها : ٱلْمُرادِفُ، ٱلصِّفَةُ، ٱلآلَةُ، عَنِ ٱلْمَصْدَرِ في ٱلْمَفْعُولِيَّةِ ٱلْمُطْلَقَةِ.
- أَعْرِبْ :
﴿ وَكَلَّمَ اللَّهُ مُوسَىٰ تَكْلِيمًا ﴾ سُورَةُ النِّساءِ : آيَة 164

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Appendix 16 Language history questionnaire (LHQ)

Participant ID (   )

Sex
      1. male
      2. female

Age (in year)

(   )

Education (your current or most recent educational level, even if you have not finished the degree) (Circle one)
      1. Graduate School (PhD)
      2. Graduate School (MA)
      3. Collage (Bachelor)
      4. High school
      5. Other

Have you ever learned Arabic Language before joining this program?
Yes
No

If yes, how long time you learned Arabic before joining this program?
      1. less than three months
      2. approximately three months
      3. more than three months. How Long (   )

Are you Arabic heritage language learner?
Yes
No

What are the textbooks that you usually used to learn Arabic?
      1. Al-kitab Fi Tallum Al-Arabieah 2nd Edition
      2. Al-kitab Fi Tallum Al-Arabieah 3ed Edition
      3. Ahlan Wa sahlan

4. Other

Have you lived in any Arab countries for three months or more?
Yes
No

If Yes, Which Country?
(   )
How Long in?
(   )

How often do you use Arabic Language in Classroom?
   1. Never
   2. Rarely
   3. Sometimes
   4. Regularly
   5. Often
   6. Usually
   7. Always
   8.
How often do you use Arabic language at home?
   1. Never
   2. Rarely
   3. Sometimes
   4. Regularly
   5. Often
   6. Usually
   7. Always

How often do you use Arabic Language with friends (out of classroom)?
   1. Never
   2. Rarely
   3. Sometimes
   4. Regularly
   5. Often
   6. Usually
   7. Always

Rate your current ability in Arabic Language overall
   1. Very poor

2. Poor
3. Limited
4. Average
5. Good
6. Very good
7. Excellent

Rate your current ability in terms of reading skill in Arabic language
1. Very poor
2. Poor
3. Limited
4. Average
5. Good
6. Very good
7. excellent

How many hours per day you spend reading in Arabic Language?
A. Less than 3 hours
B. 3 hours (approximately)
C. More than 3 hours. How Long (   )

How many hours per day you read in Arabic Language for fun?
A. Less than 3 hours
B. 3 hours (approximately)
C. More than 3 hours

How many hours per day you read in Arabic Language for School/work?
A. Less than 3 hours
D. 3 hours (approximately)
E. More than 3 hours How Long (   )

Which one of these options you feel it is easy to read? and why?
1. السماء صافية و جميلة

2. السَّمَاءُ صَافِيَةُ وَجَمِيْلَة

Why?

Appendix 17 List of words: beginner level

Word	Original Type in Arabic	Type of word based on L2 Knowledge and Possibilities (Un-Vowelized Textbook)		Type of word based on L2 Knowledge and Possibilities (Vowelized Textbook)	
بطاقة	NH	NH	بِطَاقَة	NH	بِطَاقَة
علم	H		عَلِم		عَلِم
		H	عِلْم	H	عِلْم
لبس	H	H	لَبِس	H	لَبِس
			لِبْس		لِبْس
يلبس	H	NH	يَلْبَس	NH	يَلْبَس
وصل	H	NH	وَصَل	NH	وَصَل
يعلم	NH	NH	يَعْلَم	NH	يَعْلَم
جلس	H	NH	جَلَس	NH	جَلَس
علاقة	H	NH	عَلاقَة	NH	عَلاقَة
سكن	H	H	سَكَنَ	H	سَكَنَ
			سَكَنْ		سَكَنْ
حمام	H	NH	حَمَّام	NH	حَمَّام
وطن	H	NH	وَطَن	NH	وَطَن
أدب	H	NH	أدَب	NH	أدَب
أكل	H	H	أكُل	H	أكُل
			أكَل		أكَل
زوج	H	NH	زَوْج	NH	زَوْج
عمل	H	H	عَمِل	H	عَمِل
			عَمَل		عَمَل
مجلة	NH	NH	مَجَلَّة	NH	مَجَلَّة
طقس	NH	NH	طَقْس	NH	طَقْس

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Appendix 18 List of words: intermediate level

Word	Original Type in Arabic	Type of word based on L2 Knowledge and Possibilities (Un-Vowelized Textbook)		Type of word based on L2 Knowledge and Possibilities (Vowelized Textbook)	
يحضر	H	H	يَحْضُر يُحْضِر يُحْضَر	H	يَحْضُر يُحْضِر يُحْضَر
حلويات	NH	NH	حَلَوَيات	NH	حَلَوَيات
فصح	NH	NH	فِصْح	NH	فِصْح
أضحى	NH	NH	أَضْحَى	NH	أَضْحَى
فطر	H	NH	فِطْر	NH	فِطْر
نصف	H	NH	نِصْف	NH	نِصْف
معظم	H	NH	مُعْظَم	NH	مُعْظَم
يرجع	H	NH	يَرْجِع	NH	يَرْجِع
رجع	H	NH	رَجَع	NH	رَجَع
مهندس	NH	NH	مُهَنْدِس	NH	مُهَنْدِس
عدة	H	NH	عِدَّة	NH	عِدَّة
صور	H	H	صُوَر صَوَّر	H	صُوَر صَوَّر
حضر	H	NH	حَضَر حَضَّر	NH	حَضَر حَضَّر
جمع	H	H	جَمَع جَمْع	H	جَمَع جَمْع
شعر	H	H	شَعَر شَعْر	H	شَعَر شَعْر
فضل	H	H	فَضْل فَضَّل	H	فَضْل فَضَّل
حمل	H	H	حَمَل حَمْل	H	حَمَل حَمْل
تعرف			تَعَرَّف		تَعَرَّف
	H	H	تَعَرُّف تَعْرِف	H	تَعَرُّف تَعْرِف

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Appendix 19 List of words: advanced level

Word	Original Type in Arabic	Type of word based on L2 Knowledge and Possibilities (Un-Vowelized Textbook)		Type of word based on L2 Knowledge and Possibilities (Vowelized Textbook)	
اكتشف	H	H	اكْتَشَف اكتْشِف	H	اكْتَشَف
يكتشف	H	H	يَكْتَشِف يُكْتَشَف	H	يَكْتَشِف يُكْتَشَف
قصر	H	NH	قَصُر	NH	قَصُر
امتد	H	NH	امْتَد	NH	امْتَد
يمتد	H	H	يَمْتَد	H	يَمْتَد
حول	H	H	حَول حَوَّل	H	حَول حَوَّل
يقتل	H	H	يقْتُل يُقَتِّل	H	يقْتُل يُقَتِّل
شدة	NH	NH	شِدَّة	NH	شِدَّة
مثل	H	H	مَثَل مِثْل	H	مَثَل مِثْل
يمثل	H	H	يُمَثِّل يُمَثَّل	H	يُمَثِّل يُمَثَّل
حرم	H	H	حَرَم حَرَّم حُرم	H	حَرَم حَرَّم حُرم
حزن	H	H	حَزِن حُزْن	H	حَزِن حُزْن
أمة	H	NH	أمَّة	NH	أمَّة
بلغ	H	NH	بَلَغ	NH	بَلَغ
يبلغ	H	H	يَبْلُغ يُبْلِغ	H	يَبْلُغ يُبْلِغ
مرحلة	H	NH	مَرْحَلَة	NH	مَرْحَلَة
مركز	H	NH	مَرْكَز	NH	مَرْكَز
توقف	H	H	تَوَقُّف تَوَقَّف	H	تَوَقُّف تَوَقَّف
حكواتي	NH	NH	حَكواتي	NH	حَكواتي
نقد	H	H	نَقَد نُقَد نَقَّد	H	نَقَد نُقَد نَقَّد
أثبت	H	H	أثْبَت أُثْبِت أثْبِت	H	أثْبَت أُثْبِت أثْبِت
وصف	H	H	وَصَف وُصِف وَصْف	H	وَصَف وُصِف وَصْف

أَحْمَد مُهَنْدِس يَسْكُنُ في شَقَّة فيها غُرْفَة نَوْم ومَطْبَخ وحَمّام. اِسْتَيْقَظَ أَحْمَد مِن النَّوْم، كانَ طَقْس ذَلِك اليَوْم بارِدًا، أَكَلَ أَحْمَد إِفْطارَه بِسُرْعة ثُمَّ لَبِسَ مَلابِس العَمَل، وهو يَلْبَسُ رَأى مَجَلَّة تَحْتَ الباب، أَخَذَها ثُمَّ خَرَجَ مِن المَنْزِل.

جَلَسَ أَحْمَد في الحافِلَة، ثُمّ بَدَأَ يَقْرَأُ المَجَلَّة، وَجَدَ مَوْضوعًا عَن أَهَمِيَّة الوَقْت، وأَهَمِيَّة اجْتِهاد العامِل في عَمَلِه لِيَسْتَفيدَ مِن كُلّ دَقيقَة يَقْضيها، وأَهَمِيَّة صُنْع عَلاقات جَيِّدَة مَع العامِلين الآخَرين.

لَمْ يَكُنْ مَكان عَمَل أَحْمَد بَعيداً عن سَكَن العامِلين، وَصَلَ أَحْمَد إِلى المَكان، أَخْرَجَ بِطاقَة العَمَل ثُمَّ دَخَلَ إِلى مَكْتَبِه. في ذَلِك اليَوم عَلِمَ أَحْمَد أَنَّ المُدير أَعْطاه جَائِزَة لِأَنَّه مُجْتَهِد، فَرِحَ أَحْمَد وفَهِمَ أَنَّ الاِجْتِهاد وعَلاقَة العامِل بِمُديرِه شَيْء مُهِمّ والآن أَصْبَحَ يَعْلَمُ ماذا يَعْني: مَن جَدَّ وَجَدَ وَمَن زَرَعَ حَصَدَ.

Appendix 21 Un-Vowelized text: beginner level

استيقظ حسن من النوم، كان طقس ذلك اليوم جميلا، السماء صافية، والشمس مشرقة. ذهب

حسن إلى حمام بجانب غرفته، ثم بحث عن لبس مناسب لذلك اليوم الجميل، أحب أن يلبس

ملابس العمل الصيفية، لكنه استغرق وقتا طويلا في كي تلك الملابس، لقد تأخر عن موعد

العمل، أكل تفاحة بسرعة ثم خرج من المنزل.

ذهب حسن إلى محطة القطار القريبة من سكن العمال، جلس في مكانه في القطار ثم قرأ في مجلة

موضوعا عن صنع سيارة بلا سائق! سأل نفسه كيف ستعمل؟ هل لها بطاقة تحفظ كل

معلومات الطرق؟ لم يكن يعلم كل هذه التفاصيل؟ وصل القطار إلى عمل حسن، تساءل

هل للقطار علاقة بهذا أيضا؟ هل يعمل بلا سائق؟ قرر أن يقرأ أكثر، لأن علم التقنية يحتاج

إلى فهم أكبر.

Appendix 22 Vowelized text: intermediate level

القِراءَة كَأَنَّها انْتِقال مِن بَلَد إلى آخَر، فالكِتاب عالَم آخَر تَحْمِلُه بَيْن يَدَيْك، يَرْجعُ بِك إلى الماضي، وَيَنْتَقِلُ بِك إلى المُسْتَقْبَل، يُحْضِرُ لَك المَعْرِفَة. والقِراءَة تَصْنَعُ باحِثًا يَدْرُس ما أتى بِه العِلْم، فَالقارِئ يَسْتَفيدُ مِن كُلّ يَوْم في اكْتِساب عِدَّة مَعارِف.

تُخَصِّصُ مُعْظَم الدُّوَل يَوماً لِلْقِراءَة يَحْتَفِلُ فيه المُثَقَّفون احْتِفالًا تُقَدَّمُ فيه مَشْروبات وحَلَوِيّات، ويُقَدَّمُ فيْه شُكْر لِلقُرّاء وَالمُؤَلِّفين المُتَمَيِّزين.

القارِئ الجَيِّد هُو الَّذي حَضَرَ إلى المَكْتَبات و تَعَرَّفَ عَلى الكُتُب المُفيدَة وقَرَأَها، وشَعَرَ بِها فيها مِن أفْكار، وجَمَعَ مِن مَعْلوماتِها، ثُمّ رَجَعَ بَعْد ذَلِك وقَد حَمَلَ في عَقْلِه ولَوْ نِصْف فائِدَة جَديدَة بِفَضْل تِلْك الكُتُب.

تَخْتَلِفُ أنْواع الكُتُب، بَعْضُها يَحْتَوي على الكِتابَة فَقَط وَبعْضُها فيه صُوَر تُساعِدُ على فَهْم كُلّ فَصْل. وَيَخْتَلِفُ القُرّاء، فَمِنْهُم مَن يُحِبُّ قِراءَة كُتُب التّاريخ والأدَب، وَمِنْهم مَن يُحِبُّ الكُتُب العِلْمِيَّة. بِالقِراءَة نَهَضَ الإنْسان، فَطَوَّرَ حَياتَه لِلأفْضَل، لِأَنَّ القِراءَة تَصْنَعُ الفَرْق بَيْنَ عَقْل مُتَقَدِّم وعَقْل آخَر مُتَأَخِّر.

يفضل معظم الناس قضاء الإجازات خارج الحي الذي يسكنون فيه، يقضون الوقت في

حدائق عامة أو مخيمات، وبعضهم يسافر إلى بلد آخر، وتختلف الأماكن التي يسافرون إليها.

بعضهم يفضل الذهاب إلى البحر لقضاء نصف يومه وربما استمر إلى وقت متأخر من ذلك

اليوم، قد يحضر معه أدوات الغوص ليستمتع بهذه الهواية، وبعضهم يحضر كتابا يستمتع

بقراءته. ومنهم من يحب أن ينتقل مسافات أطول بحثا عن عالم يعيش جزءا من تاريخه، قد

يجده في معارضها ومتاحفها المشهورة، وربما حضر و صور الفعاليات التاريخية والمهرجانات

التي يحتفل فيها أهل تلك البلدة بمناسبات عدة، وربما احتفل معهم وأحب طعامهم

وشاركهم على موائدهم، وذاق ما يقدمونه من طعام و حلويات، و شعر بسعادتهم، ثم يرجع

وقد حمل ذكرياتهم وتعرف على الكثير من تقاليدهم، وبهذا يكون قد رجع بتجربة مفيدة و

رائعة. وربما جمع عدة مجسمات وصور تميز تلك البلاد ليقدمها هدية لأصدقائه بفضل تلك

الزيارة.

Appendix 24 Vowelized text: advanced level

أَكَّدَت المُديرَة العامَّة لِليونيسْكو بِشِدَّة عَلى تَعْزيز التَّنَوُّع الثَّقافي واللُّغَوي. وأوْضَحَت أَنّ

احْتِفال العالَم بِالعَرَبيَّة يُمَثِّلُ إِقْرارًا بِمُساهَماتِها المُهِمَّة في تَمْثيل الثَّقافَة العالَميَّة خُصوصًا فيما يَتَعَلَّقُ

بِالفَنّ والأَدَب والنَّقْد. وأشارَت إِلى أَنّ جائِزَة الشّارِقَة تُعَدُّ مَرْكَزًا مُهِمّاً مِن مَراكِز الثَّقافَة العَرَبيَّة

قادَ اليُونيسْكو إِلى أَنْ يَكْتَشِفَ دَور التَّعَدُّد اللُّغَوي الَّذي أَثْبَتَ أَهَمِّيَّته في مُعالَجَة أَيّ قُصور أو

عَجز في وَصْف كُلّ ثَقافَة وتَعْزيز التَّواصُل بَين كُلّ الثَّقافات عَبْر تَعْزيز تَعَلُّم اللُّغات. وحَوْل

هَذا المَوْضوع أقامَت اليونيسْكو مَعْرِضًا لِلخَطّ العَرَبي يُبَيِّنُ ما بَلَغَ لَه هَذا الفَنّ في خُطوط مِثْل

خَطّ الثُّلُث والخَطّ الدِّيواني في كُلّ مَرْحَلَة تاريخِيَّة، وَضَمَّ حَرَم المَعْرِض عَدَداً مِن اللَّوْحات،

وَيُعْتَبَرُ المَعْرِض امْتِدادًا لِعَدَد مِن المَعارِض الَّتي تُقيمُها اليونيسْكو ويَبْلُغُ عَدَد زُوّارِها المئات.

ويُعَدُّ اليَوم العالَمِيّ لِلُّغات مُهِمّاً لِلتَّعْريف بِتُراث كُلّ أُمَّة مِن أُمَم العالَم. وَتُعْتَبَرُ اليونيسْكو

مُنَظَّمَة ثَقافيَّة تَهْتَمُّ بِعَرْض كُلّ ما اكْتَشَفَ العالَم مِن آثار وما قَدَّمَ مِن مُنْتَج ثَقافيّ قَد يَمْتَدّ أَثَرُه

إِلى بَقِيَّة الثَّقافات.

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Appendix 25 Un-Vowelized text: advanced level

يعتبر مجلس الأمن الدولي التابع للأمم المتحدة كيانا أساسيا في قضايا العالم، كما يعتبر مركزا

يمثل المجتمع الدولي. ولقد أصدر الكثير من القرارات المتعلقة بكل أمة. ويعتبر ملكا

لأعضائه الذين تتركز أدوارهم حول تمثيل بلادهم عبر كل مرحلة من إصدار القرارات. ومن

اطلع على ممارسات البنك اكتشف الهيمنة للدول الصناعية، وربما وصف بعض قراراته

بالقاسية. وقد بلغ عدد أعضاء مجلس المديرين التنفيذيين أربعة وعشرين يمتد تأثيرهم إلى

القرارات التي يصدرها البنك. كما يعتبر التصويت في صندوق النقد من مصلحة الدول

الصناعية، فدولة كبلجيكا يبلغ عدد مواطنيها حوالي العشرة ملايين تحتكر اثنين بالمئة،

ويكتشف المطلع أن الصين لها ثلاثة بالمئة من الأصوات. ويعتبر حق النقض تقليدا مهما من

تقاليد البنك، وقد حرم حق النقض مصر من تمويل السد العالي، وعارض بشدة تقديم

القروض لبعض الدول مثل العراق. و حول حق النقض مسار كثير من القضايا، وأثبت

المجلس عجز سياساته التي مازال الكثير منها امتدادا لتلك التقاليد، وما يصاحبها من قصور.

Appendix 26 IRB Form

UNIVERSITY OF MICHIGAN
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Health Sciences and Behavioral Sciences Institutional Review Board (IRB-HSBS) • 2800 Plymouth Rd., Building 520, Room 1170, Ann Arbor, MI 48109-2800 • phone (734) 936-0933 • fax (734) 998-9171 • irbhsbs@umich.edu

To: Ali Al Midhwah

From:

Thad   Polk

Cc:

Mohammad   Alhawary
Ali   Al Midhwah

Subject: Notice of Exemption for [HUM00125697]

SUBMISSION INFORMATION:
Title: The role of diacritics in word recognition and their impact on Arabic L2 learners' reading speed, accuracy, and comprehension at different stages of Arabic L2 acquisition
Full Study Title (if applicable): The role of diacritics in word recognition and their impact on Arabic L2 learners' reading speed, accuracy, and comprehension at different stages of Arabic L2 acquisition
Study eResearch ID: HUM00125697
Date of this Notification from IRB: 3/3/2017
Date of IRB Exempt Determination: 3/3/2017
UM Federalwide Assurance: FWA00004969 (For the current FWA expiration date, please visit the UM HRPP Webpage)
OHRP IRB Registration Number(s): IRB00000246

IRB EXEMPTION STATUS:
The IRB HSBS has reviewed the study referenced above and determined that, as currently described, it is exempt from ongoing IRB review, per the following U-M demonstration exemption category:

EXEMPTION #2a:
Minimal risk research that involves a non-invasive intervention followed by data collection via survey, interview (including focus groups), or observation unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation. **The research is not federally sponsored or intended to collect pilot data to support proposals for federal funding.**

This exemption applies only to projects that are not federally-funded, regulated by the FDA, or conducted under a Certificate of Confidentiality. If you receive federal funding for the project, please notify the IRB immediately. U-M Exemption #2a cannot be applied to federally-funded projects.

Note that the study is considered exempt as long as any changes to the use of human subjects (including their data) remain within the scope of the exemption category above. Any proposed changes that may exceed the scope of this category, or the approval conditions of any other non-IRB reviewing committees, must be submitted as an amendment through eResearch.

Although an exemption determination eliminates the need for ongoing IRB review and approval, you still have an obligation to understand and abide by generally accepted principles of responsible and ethical conduct of research. Examples of these principles can be found in the Belmont Report as well as in guidance from professional societies and scientific organizations.

SUBMITTING AMENDMENTS VIA eRESEARCH:
You can access the online forms for amendments in the eResearch workspace for this exempt study, referenced above.

ACCESSING EXEMPT STUDIES IN eRESEARCH:
Click the "Exempt and Not Regulated" tab in your eResearch home workspace to access this exempt study.

Thad A. Polk

Thad Polk
Chair, IRB HSBS

Appendix 27 Consent form

Consent to Participate in a Research Study

Title of the Project:

The role of diacritics in word recognition and their impact on Arabic L2 learners' reading speed, accuracy, and comprehension at different stages of Arabic L2 acquisition

Principal Investigator:

Ali Al Midhwah, PhD candidate, University of Michigan, Near Eastern Studies Department – Arabic Linguistics – Arabic Second Language Acquisition.

Faculty Advisor:

Professor Mohammad Alhwary, Professor of Arabic Linguistics and Second Language Acquisition University of Michigan, Near Eastern Studies Department

Invitation to Participate in a Research Study

I invite you to be part of a research study about The role of diacritics in word recognition and their impact on Arabic L2 learners' reading speed, accuracy, and comprehension at different stages of Arabic L2 acquisition.

Description of Your Involvement

If you agree to be part of the research study, I will ask you to complete survey and read out loud (list of words, two texts in Arabic language, then answer some questions related to that texts).

Benefits of Participation

It is unlikely that you will personally benefit from participating in this research, but I believe this study will deepen our understanding of word recognition in Arabic as a second language. Although you may not directly benefit from being in this study, others may benefit because the knowledge received might be of value to practitioners of Arabic as a foreign language. The information is expected to be informative and helpful in developing Arabic Second language courses and textbooks.

Risks and Discomforts of Participation

There are no risks from completing the questionnaire and participating in the reading tasks. In addition, all of the tasks and questions asked are in no way sensitive.

Compensation for Participation

For your participation in this research project, you will receive $10 or a gift card if you finished all tasks of this study.

Confidentiality

Your name will not be revealed, and is not needed for completing the survey and tasks. Instead, pseudonyms and random numbers will be used to protect the confidentiality and privacy of your

1

participation. I plan to publish the results of this study. I will not include any information that would identify you. Your privacy will be protected and your research records will be confidential.

Storage and Future Use of Data

All data will be stored in a password-protected computer belonging to the researcher; Your name and any other identifying information will remain anonymous. All recordings will be destroyed after finishing this study.

Voluntary Nature of the Study

Participating in this study is completely voluntary. Even if you decide to participate now, you may change your mind and stop at any time. You do not have to answer a question you do not want to answer. Just tell me and I will go to the next question. If you decide to withdraw before this study is completed your data will be deleted.

Contact Information for the Study Team

If you have questions about this research, including questions about scheduling or your compensation for participating, you may contact:

Ali Al Midhwah (aalmdwah@umich.edu)

Consent

By signing this document, you are agreeing to be in the study. I will give you a copy of this document for your records. I will keep one copy with the study records. Be sure that I have answered any questions you have about the study and that you understand what you are being asked to do. You may contact the researcher if you think of a question later.

I agree to participate in the study.

_____
Printed Name

_____
Signature   Date

2

225

Appendix 28 Questions of target words comprehension (vowelized text): beginner level

Participant ID (   )
Based on the text (1) of the reading passage what is the best meaning
of:

1   حمام = _____

2   طقس = _____

3   أكل = _____

4   لبس = _____

5   يلبس = _____

6   مجلة = _____

7   جلس = _____

8   عمل = _____

9

سكن = ــــــــــــــــــــــــــــــــــــ

10

وصل = ــــــــــــــــــــــــــــــــــــ

11

بطاقة = ــــــــــــــــــــــــــــــــــــ

12

علم = ــــــــــــــــــــــــــــــــــــ

13

علاقة = ــــــــــــــــــــــــــــــــــــ

14

يعلم = ــــــــــــــــــــــــــــــــــــ

Appendix 29 Questions of target words comprehension (un-vowelized text): beginner level

Participant ID (**)**

Based on the text (2) of the reading passage what is the best meaning of:

1   طقس = _____

2   حمام = _____

3   لبس = _____

4   يلبس = _____

5   أكل = _____

6   سكن = _____

7   جلس = _____

8   مجلة = _____

9   بطاقة = _____

10   يعلم = _____

11   وصل = _____

12   عمل = _____

13   علاقة = _____

14   علم = _____

Appendix 30 Questions of target words comprehension (vowelized text): Intermediate level

Participant ID (   )
Based on the text (1) of the reading passage what is the best meaning of:

1   يرجع = _____

2   يحضر = _____

3   عدة = _____

4   معظم = _____

5   حلويات = _____

6   حضر = _____

7   تعرف = _____

8   شعر = _____

9 جمع = _____

10 رجع = _____

11 حمل = _____

12 نصف = _____

13 بفضل = _____

14 يحب = _____

15 بفضل = _____

Appendix 31 Questions of target words comprehension (un-vowelized text):
Intermediate level

Participant ID (   )
Based on the text (2) of the reading passage what is the best
meaning of:

1   معظم = _____

2   نصف = _____

3   يحضر = _____

4   يحب = _____

5   حضر = _____

6   صور = _____

7   عدة = _____

8   حلويات =   ـــــــــــــــــــــــــــــــــــــ

9   شعر =   ـــــــــــــــــــــــــــــــــــــ

10   يرجع =   ـــــــــــــــــــــــــــــــــــــ

11   حمل =   ـــــــــــــــــــــــــــــــــــــ

12   تعرف =   ـــــــــــــــــــــــــــــــــــــ

13   رجع =   ـــــــــــــــــــــــــــــــــــــ

14   جمع =   ـــــــــــــــــــــــــــــــــــــ

15   بفضل =   ـــــــــــــــــــــــــــــــــــــ

Appendix 32 Questions of target words comprehension (vowelized text): Advanced level

Participant ID (　　　　　**)**
Based on the text (1) of the reading passage what is the best meaning of:

1　بِشدة = ＿＿＿＿＿＿＿＿＿＿＿＿＿＿

2　يمثل = ＿＿＿＿＿＿＿＿＿＿＿＿＿＿

3　النقد = ＿＿＿＿＿＿＿＿＿＿＿＿＿＿

4　مركز = ＿＿＿＿＿＿＿＿＿＿＿＿＿＿

5　يكتشف = ＿＿＿＿＿＿＿＿＿＿＿＿＿＿

6　أثبت = ＿＿＿＿＿＿＿＿＿＿＿＿＿＿

7　وصف = ＿＿＿＿＿＿＿＿＿＿＿＿＿＿

8　حول = ＿＿＿＿＿＿＿＿＿＿＿＿＿＿

9
بلغ = _____

10
مثل = _____

11
مرحلة = _____

12
حرم = _____

13
يبلغ = _____

14
أمة = _____

15
اكتشف = _____

16
يمتد = _____

Appendix 33 Questions of target words comprehension (un-vowelized text): Advanced level

Participant ID (   )

Based on the text (2) of the reading passage what is the best meaning of:

1   مركز = ــــــــــــــــــــــــــــــــــ

2   يمثل = ــــــــــــــــــــــــــــــــــ

3   أمة = ــــــــــــــــــــــــــــــــــ

4   مرحلة = ــــــــــــــــــــــــــــــــــ

5   اكتشف = ــــــــــــــــــــــــــــــــــ

6   وصف = ــــــــــــــــــــــــــــــــــ

7   بلغ = ــــــــــــــــــــــــــــــــــ

8   يمتد = _____

9   النقد = _____

10   يبلغ = _____

11   يكتشف = _____

12   حرم = _____

13   مثل = _____

14   بشدة = _____

15   حول = _____

16   أثبت = _____

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