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The Effects of an Interactive E-Book on Promoting Idiomatic Competence and Motivation Among L2 Learners of Arabic Language in Saudi Arabia

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The Effects of an Interactive E-Book on Promoting Idiomatic Competence and Motivation
Among L2 Learners of the Arabic Language in Saudi Arabia

by

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A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
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Keywords: Idiom Diffusion Model (IDM), Instructional Material Motivation (IMMS), Arabic
Idioms, Authentic Materials

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DEDICATION

I dedicate this dissertation to my parents Yazeed Assad Alfaifi and Jamilah Ahmed Alfaifi who gave me unwavering support and patiently wait for their old son to back home with flying colors. To my wife, Budur Alfaifi, my best friend, and my partner in life, who has been my rock through this journey. You have been my constant supporter, my confidant, my love, and my partner in everything. Your love, encouragement, and understanding have been the driving force behind my success, and I am forever grateful. Also, to my son Tayam Adel, your smile is blessing that motivated me to do my best. To my brothers, Abdullah, Bassam, Ahmed, and Mosab for being the source of encouragement to fulfill my dream. To my sisters Rdiah, Amal, Nabila, Zainab, and Basma thank you for your unconditional love and for being there for me and for supporting me in every step of the way. This dissertation is as much yours as it is mine. I dedicate this work to you all, with all my love and gratitude.

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ABSTRACT

Native Arabic speakers used idiomatic expressions such as idioms, formulas, and collocations, in their daily communications. In learning Arabic as a second language (L2), effective communication requires “the ability to understand and use idioms appropriately and accurately in a variety of sociocultural contexts, in a manner like that of native speakers, and with the least amount of mental effort” (Liontas, 2015, p. 441). Yet, promoting L2 idiomatic competence in the classroom and beyond remains a difficult task (Liontas, 2006; Tabatabaei, 2012). The utilization of e-books in the learning environment in L2 teaching in the English language has received much research attention. However, few studies, if any, have explored the impact of using an interactive e-book to learn Arabic idiomatic expressions. The purpose of this dissertation was three-fold: (1) to examine the effects of using an interactive e-book on promoting idiomatic competence, (2) to determine if an interactive e-book increases learners’ motivational levels in terms of attention, relevance, confidence, and satisfaction, and (3) to explore learners’ perspectives regarding the utilization of an interactive e-book to learn idiomatic expressions. More specifically, among a variety of idiomatic expressions, I only focused on Liontas’ (1999) vivid phrasal (VP) idioms, such as أصاب كبد الحقيقة (literally, *to hit the liver of the truth*; figuratively, *to identify the core of the issue*) that evokes a powerful mental image.

A total of 84 adult learners of the Arabic language in Saudi Arabia participated in a mixed-methods study. Two advanced language classes were assigned the task of learning VP idioms through an interactive e-book (experimental group) and traditional paper-based learning (control group). Ten target VP idioms were selected based on the reviewed literature and the

Arabic idiomatic dictionary. At the beginning of the study, all participants completed a demographic information survey, and a pre-test of idiomatic competence. Following the completion of the learning, all participants completed an immediate post-test motivational survey. The findings of the pre-test did not show a statistically significant difference, highlighting that learners' prior idiomatic knowledge had no impact. Due to the violation of the normality assumption of the data set, a non-parametric analysis Mann–Whitney U test was employed. The findings of the post-test showed that there was statistical significance in favor of the experimental group, with a small effect size. In terms of motivation, there was no statistical significance between the groups in all motivational aspects, including attention, relevance, confidence, and satisfaction. Thematic analysis of the participants' interviews showed several issues based on their learning experience, including how the e-book enhanced their learning of idiomatic expressions, learner strategies, difficulties in using the e-book, the impact of authentic materials, and recommendations to improve e-book learning environments. The findings of the qualitative data indicated that an interactive e-book has a positive effect on learners' idiomatic competence and motivation.

CHAPTER 1: INTRODUCTION

Background of the Study

Comparable to any living language, the Arabic language contains a variety of idiomatic expressions, such as ذر الرماد على العيون (to *throw ash in the eyes*) that native speakers employ to express feelings and thoughts. Those idiomatic expressions appear in various languages based on empirical evidence acquired from native speakers discourses and corpus-based research (Grant, 2005; Liu, 2003, 2008; Simpson & Mendis, 2003; Sinclair, 1991). Native Arabic speakers may seek to use idiomatic expressions to beautify their speech and avoid explicit expressions that may cause annoyance or embarrassment. Idiomatic expressions are employed not only in native language conversational and informal discourses but are also used in academic writing (Liontas, 2008). Even though the Arabic language is one of the most widely spoken languages (Beeston, 2016), second language learners (L2) continue to face challenges in the acquisition of idioms (Liontas, 2002a).

Because learners are more likely to encounter authentic situations where idiomatic expressions are expressed frequently, Larsen-Walker (2020) addressed substantial difficulties with learners attempting to comprehend authentic content in movies, news, and even in communicating with native speakers where idioms and slang are commonly employed. O'Dell and McCarthy (2010) argued that if L2 learners want to read authentic materials such as literary fiction, magazines, and newspapers, or comprehend television shows, songs, and films, they will need to acquire and comprehend a great many idiomatic expressions. The comprehension of idiomatic expression can boost a learner's communication in the target language. In second language

learning L2, “one of the principal goals of learning another language is the ability to use the language competently and appropriately to communicate thoughts, ideas, and interests, as the need arises across contexts and audience” (Liontas 2018a, p.1).

Audience here can refer to native speakers of Modern Standard Arabic (MSA) or native speakers of various Arabic dialects. A rich vocabulary knowledge may enable individual L2 learners to conduct a conversation. However, in native language discourse, there are expressions that consist of literal and figurative meaning that may not be identified based on the knowledge of familiar words. For instance, consider this Arabic idiomatic expression: *خرج من عنق الزجاجة* (literally, *to pass through a bottleneck*; figuratively, *to pass through a situation through tremendous effort and difficulty*). Learners may not be able to grasp the overall meaning of this idiom by solely analyzing its components, including verb, noun, and preposition.

Adult L2 learners of the Arabic language may recognize the essentials of vocabulary knowledge and this recognition sometimes guides the learner’s attention and motivation to learn new words. Vocabulary knowledge is often associated and measured by the number of known words in the target language (Kim, 2016). However, native speakers utilize various expressions which do not refer to the literal meaning (Liontas, 2002a). Concentrating only on learning the meanings of individual words and ignoring the acquisition of other idiomatic expressions such as idioms and collocations sequences may cause low lexical knowledge in the target language. Cooper (1999) stated that “since idiomatic expressions are so frequently encountered in both spoken and written discourse, they required special attention in language programs and should not be relegated to a position of secondary importance in curriculum” (p. 259). Low lexical knowledge of the target language leads to ineffective language processing, especially in reading and listening comprehension (Kim, 2016). Conversely, studies highlighted that learning idiomatic expressions

can positively affect L2 learners' proficiency to communicate effectively in the target language (Liontas, 1999, 2002a, 2015a).

Theoretical Framework of Idioms

What are Idioms?

Extensive reading of publications in the field of idiomaticity in both Arabic and English languages clearly shows that idioms are defined differently based on the research approaches employed and purposes pursued. Some scholars in idiomaticity provided broad definitions of idioms that combine idiomatic expressions such as idioms, collocation, and other figures of speech such as proverbs and metaphors, and even single polysemic words (Liu, 2008). Both Hockett (1958) and Cooper (1998) considered individual words that people employed metaphorically as idioms such as the word "weigh" in the expression "to weigh *a decision*" (Liu, 2008). Conversely, some scholars look at idioms as a narrow term that refers to "fixed and semantically opaque or metaphorical expressions such as *kick the bucket* or *spill the beans* (Moon, 1998, 1998, p. 4).

According to Moon (1997), idioms are "multi-word items which are not the sum of their parts; they have holistic meanings which cannot be retrieved from individual meaning of component words" (p. 46). Noncompositionality is a term used to describe idiomatic expressions that are inflexible in which figurative meaning cannot be understood based on analyzing a single unit and the relationship between figurative meaning and literal meaning is arbitrary (Kövecses, 2002). Fernando and Flavell (1981) expressed that idioms must be *institutionalized*. For instance, the VP idiom *يطرق الحديد وهو حامي* (literally, *to hit while the iron is hot*; figuratively, *to go for the chance immediately*) should be widely recognized to include a broad audience of native Arabic speakers. Similarly, Nunberg et al., (1994) stated that idioms must have an element of

conventionalization in that idioms must be being recognized and employed in a culture group.

Among idiomatologists, idioms are defined based on a variety of perspectives. Makkai (1972) concentrate on lexical and grammatical aspects of regular idioms. For example, He focused on polymorphemic words that consist of free morphemes such as *blackmail*. He classified idioms into two types including idioms of encoding and idioms of decoding. Because “idiom is an ambiguous term, used in conflicting ways” (Moon, 1998, p. 3), researchers should clearly define types of idiomatic expressions being utilized and provide an adequate description of idioms that would follow inclusive and exclusive categories. For instance, Liontas (1999, 2001, 2002a, 2002b, 2002c, 2002d, 2002e, 2003, 2007, 2008, 2015a) focuses only on cognitive processing of specific idiom types he called *Vivid Phrasal Idioms* (VP) in L2 learning and teaching. He described VP idioms as an expression that “combines powerful visual imagery (literal, referential semantic meaning) with a memorable, striking expression (non-literal, metaphoric utterance meaning)” (Liontas, 2002a, p. 78), such as the English and Arabic expression, يبحث عن إبرة في كومة قش (literally, *to look for the needle in a haystack*; figuratively, *to look for something that impossible or hard to find*).

Similarly, in the Arabic language, researchers have employed a variety of terms in the discussion and defining of idioms such as Arabic idioms and phraseology (Torlakova, 2008), Arabic metaphor (Menacere, 2012), idioms of distress in Arabic (Nasir et al., 2018), Arabic collocations (Saif & Ab Aziz, 2011), idiomatic expressions (Alqahtani, 2014), spoken Arabic proverbs (Yassin, 1988), Arabic MWEs (Daoud et al., 2016), Arabic idioms (Yassin, 1978), idiomaticity in Arabic, and idioms polysemy (Owens, 2015). The researchers mentioned above clearly show that they adapted various terminologies in their discussion of idiomaticity. Therefore, to draw researcher attention, Liontas (2019) presented a list of 73 terms to describe various

What is the Idiom Diffusion Model (IDM)

Some of the earliest research that was conducted to facilitate theoretical models in understanding idiom processing did not distinguish between L1 and L2 learners. However, Liantas's (1999) *Idiom Diffusion Model* (IDM) is now widely regarded as the first model to highlight idiomatic processing in L2 (Alshaikhi, 2018; Khoshnevisan, 2020; Larsen-Walker, 2020). Liantas (2002) addressed the difficulties and confusion that appear in idiomatologists' research in defining idioms. Instead of providing a novel definition of idioms, Liantas (2002a, 2017a) provided several levels of idiomatic processing for language teachers to be aware of in L2 idiom comprehension. To understand L2 idiom processing levels, Liantas (1999) emphasized his idea of *Conceptual Semantic Image* (CSI) that presents "how close or distant a target-language idiom is from its equivalent native-language idiom, both conceptually (i.e., in term of the picture it evokes) and semantically (i.e., in terms of literal meaning of its words)" (p. 78). The Idiom Diffusion Model consist of four levels as follows:

- *Lexical Level (LL)* deals with idioms that indicate lexical and pictorial levels matching in L1 and L2. For instance, the English expression, *to kill two birds with one stone*, fully matches the Arabic idiom, *تقضي على عصفورين بحجر* (literally, *to kill two birds with one stone*; figuratively, *to achieve two goals at one*).
- *Semi-lexical Level (SLL)* is placed somewhere in the middle of the Lexical-Image Continuum where SLL idioms do not fully match the lexical and pictorial level in L1 and L2. For instance, *A bird in the hand is worth two in the bush*; its equivalent in Arabic is *عصفور في اليد خير من عشرة على الشجرة* (literally, *a bird in the hand is worth ten on the tree*; figuratively, *things that being already acquired are more valuable than things that are difficult to have*). As can be seen in the example provided, both idioms almost correspond

lexically and pictorially, and differ in two words namely (“tree” vs “bush” and “ten” vs “two”). Liontas (1990) explained that speakers may or may not employ all the same individual words that exist in native language idioms and may change only a few words or even only one word.

- *Post-lexical Level (PLL)* deals with idioms where native language and target language idioms do not match either pictorially or lexically. For example, the Arabic idiom, طائر في السماء (literally, *to fly in the sky*; figuratively, *to feel wonderful and happy*), may be expressed with the English idiom *to feel like a million dollars*.

Table 1

Example of VP Idioms Sub-Categorization of VP Idioms in Arabic and English

Idiom Level	Arabic and English Idioms	Figurative Meaning
LL Idioms	تقتضي على عصفورين بحجر واحد to kill two birds with one stone	To achieve two goals at once
SLL Idioms	عصفور في اليد خير من عشرة على الشجرة A bird in the hand is worth two in the bush	Things that people have already acquired are more valuable than the things they hope to acquire.
PLL Idioms	طائر في السماء To feel like a million dollars	To feel wonderful and happy

It is crucial to note that researchers should focus on the VP idioms in the target language to determine if they are LL, SLL, or PL. However, some VP idioms may be considered LL in the Arabic language and SLL in the English language, and yet PLL in another language (Liontas, 1999).

Vivid Phrasal Idioms (VP) is a term coined by Liontas (2002a) related to a specific type of idiom that “combines powerful visual imagery (literal, referential semantic meaning) with a memorable, striking expression (non-literal, metaphoric utterance meaning)” (p. 78). A

highlighted explanation of VP idioms by Liontas helps us recognize that each VP idiom must contain literal concrete meaning and abstract figurative meaning such as *once in a blue moon* and *to pull one's leg*. Furthermore, Liontas (1999, 2002a, 2017a) provides the following categories that help researchers and L2 language teachers alike, including Arabic, to distinguish VP idioms from other idiomatic expressions.

- (1) VP idioms are *not* polymorphemic or monomorphemic expressions. For instance, a *flop* in English and منحوس in Arabic. Although the two words are expressions that have the meaning of failure and bad luck, those words appear with multiple morphemes in a single word which do not fall under the VP idiom categories. Specifically, VP idioms are not ungrammatical expressions, prepositional phrases, and social formula expressions such as *how are you* in English and السلام عليكم (*peace be upon you*) in Arabic.
- (2) When one hears VP idioms, one also elicits and evokes a mental image, the reason why they are called Vivid Idioms.
- (3) VP idioms are *not* decomposable to reach the figurative meaning. In other words, a VP idiom has conventionalized figurative meaning that cannot be identified based on analyzing its familiar word meanings.
- (4) VP idioms do *not* strictly correlate with specific grammatical parts of speech. VP Idioms that contain verbs do not appear in only one tense.
- (5) Single-word expressions that carry figurative meaning do not fall under the VP idiom categories. VP idioms are “conventionalized complex multilexemic phrasal expressions occurring above word level and usually of sentence length; hence it is phrasal” (Liontas 2017a, p. 78).

(6) The figurative meaning of a VP idiom cannot be understood based on grammatical structure evidence for semantic information of its components.

While several studies have utilized VP idiom instruction supported by technological tools to improve L2 English idiomatic competence (Alshaikhi, 2018; Moreb, 2022; Khoshnevisan, 2020; Larsen-Walker, 2020; Liantas, 1999, 2002a, 2002b, 2002c, 2002d, 2002e, 2017a), it is worthwhile to provide explicit instruction to develop L2 learners' idiomatic competence.

What is Idiomatic Competence?

A common goal of introducing idioms in L2 settings is to assist learners in developing their idiomatic competence. Traditionally, language competence was associated with linguistic competence (Schmidt, 1993). Canale and Swain (1980) proposed a theoretical framework that introduced the notion of communicative competence. This framework consisted of four major areas: (a) linguistic competence that involves grammatical, phonetical, and lexical knowledge; (b) sociolinguistic competence including the knowledge of sociocultural norms; (c) discourse competence of knowing the mechanism of discourse; and (d) and strategic competence strategies.

Adding to the list, Liantas (2015a, 2017a) explained that a person who has *idiomatic competence* must know how and when to apply idiomatic language to express meaning both accurately and appropriately, and with a minimal amount of mental effort. He went further and made a substantial distinction between two aspects of idiomatic competence: *idiomatic use* and *idiomatic usage*. He explained that *idiomatic usage* deals with the ability of learners to show their knowledge of idiomaticity. However, *idiomatic use* is associated with the necessity of L2 learners to “demonstrate their ability to use their knowledge of idiomaticity for effective communication in actual social situations” (Liantas, 2015, p. 632).

Learners go through distinct stages in idiomatic competence based on exposure to a variety of authentic learning experiences. According to Liantas (2002d, 2015a), developing idiomatic competence deals with learners moving from a *declarative stage* to an *associative stage* and ending with the *autonomous stage*. L2 learners show a repetitive control of idiomatic expressions at the associative stage. In the associative stage, learners can demonstrate partial control of idiomatic knowledge. In the autonomous stage, learners will have developed sufficient automatic idiomatic knowledge they could utilize almost automatically to comprehend and produce idioms in authentic situations as needed. Liantas (2002d, 2015a) argued that for learners to achieve such an autonomous stage, they must go through a sufficient degree of proceduralization where they have frequent exposure to and familiarity with idiomatic expression in authentic situations. He claimed that L2 learners in the high stage of idiomatic competence employed effective idiomatic knowledge with less amount of mental effort in idiom comprehension and production (Liantas, 2015a). Overall, the process of idiomatization is a term coined by Liantas (1999) which highlights idiomatic knowledge proceduralization where learners begin with a declarative stage and end with the autonomous stage.

Statement of the Problem

L2 learners of the Arabic language seek to acquire another language to communicate effectively with native Arabic speakers. To create effective communication, L2 learners often look at Arabic idioms as a significant component of language competence that may require sufficient time and explicit practice in authentic situations. This difficulty in dealing with Arabic idioms in the L2 settings goes beyond understanding literal and figurative meaning of idioms to knowing more about Arabic cultures, history, dialects, religions, and legends. Idioms have a strong association in the deep cultures of the Arabic speaking world (Khonbi & Sadeghi, 2017). As

Liontas described it, “[b]ecause idioms are not based linguistically, but rather socioculturally, their study makes ‘culture’ more than merely a word, whether written with ‘c’ or big ‘C’ (as ‘culture’ is often written in the literature of pedagogy)” (p. 7). Without idiom knowledge, communication can easily break down and that can prevent relationships and intercultural communication (Khonbi & Sadeghi, 2017).

Although idiomatic expressions frequently occur in daily communication (Xie, 2017), fostering L2 learners’ idiomatic competence becomes an essential task. Alshaikhi (2018) highlighted a problematic issue facing L2 learners when native speakers avoid explicit expression and choose to employ idiomatic expression. In teaching idioms, it is notable that L2 language teachers faced difficulty in encouraging learners to employ idioms beyond L2 classrooms. Consequently, learners may show low motivation to comprehend idiom meaning, especially if they do not have opportunities to interact with idioms in authentic situations. Even though Liontas (1999, 2001, 2002a, 2002b, 2002c, 2002d, 2002e, 2003, 2007, 2008, 2015b, 2017a, 2018a, 2019) addressed the importance of focusing on idiom teaching in second language settings, teaching Arabic idioms in Saudi Arabia’s L2 language program remains largely neglected today. While pedagogical content in SL programs is heavily designed toward vocabulary learning, it is argued that “it is only logical to suggest time-tested pedagogical structures that have the potential to support language acquisition and processing beyond single-word vocabulary” (Liontas, 2019, p. 80).

Idioms are arbitrary and involve non-literal meaning. Language learners face challenges in learning idiomatic expressions (Freyn, 2017; Liontas, 2002a, 2015a). According to Pimenova (2011), there are a number of reasons why learning idioms is considered difficult: (a) the ambiguous vocabulary and unfamiliarity within idioms, (b) no equivalents of idioms in L1, (c)

cultural differences, (d) poor background knowledge and experiences dealing with idioms, and (e) the limited context of given idioms. Although idiomatic expressions are utilized in everyday situations by native speakers, teaching these idioms explicitly remains as elusive as ever (Liontas, 2002a, 2015a, 2018b, 2019). Enhancing idiomatic competence in learning foreign languages such as English remains a challenging task (Liontas, 2015a). Consequently, even for L2 learners at an advanced level, a lack of competence on identifying and developing the awareness of idiomatic expressions may affect learners' performance and fluency in the target language (Ellis, 2012; Liontas, 2015a, 2017a; Schmitt, 2004).

Vivid Phrasal Idioms (VP) such as *to pull someone leg* appear to be a difficult task for L2 learning and teaching (Cieślicka, 2006; Conklin, & Schmitt, 2008; Steinel et al., 2007). Despite several studies that examine the use of technology to enhance L2 idiomatic competence in learning VP English idioms (Alshaikhi, 2018; Li, 2019; Khoshnevisan, 2020, Larsen-Walker, 2020), few researchers focused on promoting L2 idiomatic competence among L2 learners of the Arabic language in Saudi Arabia (Alshaikhi, 2018; Moreb, 2022). However, in terms of Arabic L2 learners, no research, to my knowledge, has explored the impact of technology in developing idiomatic competence. Learning and teaching idioms requires attention in Arabic L2 settings. To address this gap, explicit instruction that takes advantage of an interactive e-book environment may offer an opportunity to overcome current problems with idiom comprehension and production and provide evidence of technology effects in promoting idiomatic competence and motivation among Arabic L2 learners in Saudi Arabia.

The Purpose of the Study

The primary purpose of this study was to examine the impact of using an interactive e-book environment to promote idiomatic competence and motivation among L2 learners of Arabic

language—more specifically, the ability of L2 learners of the Arabic language to comprehend and produce VP idioms. I used an explanatory mixed method approach to provide quantitative and qualitative evidence of Arabic VP idiom achievements. Overall, I utilized an interactive e-Book environment to provide instruction of VP idioms to L2 learners at the advanced language level in Arabic Language Institutions in Saudi Arabia.

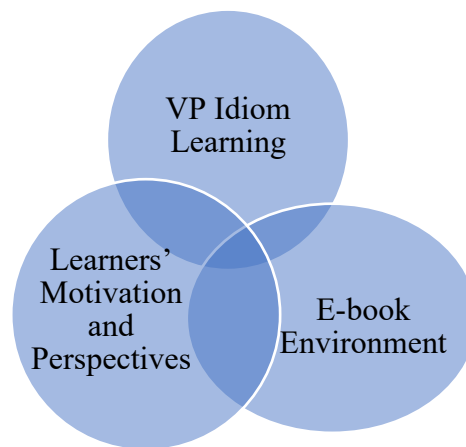


Figure 2

Study Focus Area Overview

Research Questions

I employed an explanatory mixed method approach that provided quantitative and qualitative evidence of L2 learners' VP idiomatic competence. In the quantitative part, I examined L2 learners' VP idiom competence through a pre/post-test. Learners' motivation was explored quantitatively through the *Instructional Materials Motivation Survey* (IMMS). In the qualitative part, I addressed learners' perspectives and experiences in utilizing the e-book environment to learn VP idioms. Three questions guided this study:

1. What is the effect of using an interactive e-book on L2 learners' VP idiom competence in Arabic?
2. What is the effect of using an interactive e-book on L2 learners' motivation in Arabic regarding attention, relevance, confidence, and satisfaction?
3. How do L2 learners of Arabic studying in Saudi Arabia perceive the effectiveness of utilizing an interactive e-book on learning VP idioms?

Significance of the Study

The current study has the potential to impact four areas that include the research gap, Arabic L2 pedagogy, methodological approach, and technology applications in L2 learning of Arabic language. First, there is a gap in the current research related to VP idioms in L2 Arabic setting. Promoting VP idiom comprehension and production has peeked researchers' attention in various L2 languages settings such as Iranian L2 EFL learners (Khoshnevisan, 2020), ESL learners in the United States (Alshaikhi, 2018, Larsen-Walker, 2020,), Chinese EFL learners in China (Z. Li, 2019; S. Li, 2022), Arabic EFL learners in Saudi Arabia (Alshaikhi, 2018; Moreb, 2022). However, to my knowledge, no research has been conducted to examine VP idioms among L2 learners of the Arabic language in Saudi Arabia.

Second, this study hoped to make a significant contribution to pedagogical practices of L2 Arabic idioms. While highlighting the role of technology applications in the form of an e-book environment, the findings of the current study provided a description of possible approaches, instruction, and idiom pedagogy that could be utilized to enhance Arabic L2 idiomatic competence.

Third, a variety of technology-based applications are used to promote comprehension and production of idiomatic competence such as augmented reality (AR) (Khoshnevisan, 2020),

Textual Enhancement (TE) (Alshaikhi, 2018), multimedia tools (Larsen-Walker, 2020), Mobile-Assisted Language Learning MALL (Z. Li, 2019; S. Li, 2022; Wong, & Looi, 2010), Computer-Assisted Language Learning CALL (Cucchiaroni et al., 2020), Comics Strips (Luz-Ayde, 2021) and Movie Clips (Alghamdi, 2022). However, no research, to date, has been conducted to investigate the effects of E-book in learning VP idioms among L2 learners of Arabic language.

Fourth, prior research employed mixed methods approach to investigate idioms learning in L2 settings (Alshaikhi, 2018; Li, 2019; Khoshnevisan, 2020; Larsen-Walker, 2020; Lontas, 2002a). For instance, several studies reported not only learners' perspectives of learning idioms (Alshaikhi, 2018; Lontas, 2002a, 2007), but also provided qualitative evidence of the impact of technology on learning idioms (Alshaikhi, 2018; Li, 2019; Khoshnevisan, 2020; Larsen-Walker, 2020; Lontas, 2002). However, a mixed method approach that provides both quantitative and qualitative evidence of L2 learners' performance in learning Arabic VP idioms is missing from the majority of recent L2 research.

Finally, Modern Standard Arabic (MSA) is the language used officially in this academic context in Saudi Arabia. Outside of L2 classrooms, learners are more likely to encounter authentic conversations that are based on the Saudi dialect. A combination of VP idioms that exist in MSA and the Saudi dialect may well develop L2 learners' understanding of native Arabic speaker dialect, culture, and eventually help to enhance learners' idiomatic competence (Arabic MSA & Saudi dialect).

Definition of Terms

Before diving into Chapter Two, it was crucial to explain the definitions of the vital concepts that are mentioned in the current research, including idiomatic competence, interactive e-book, VP idioms, and mixed methods (MM).

Vivid Phrasal Idioms (VP): This study adapted the definition by Liantas (1999):

“Polysemous phrasal units that combine powerful literal visual imagery (literal, referential meaning) with a memorable, striking expression (institutionalized, figurative meaning) occurring above word level and often, but not always, in the length of sentence. Examples of the latter idiom type are *to look for a needle in a haystack*” (Liantas, 2015a, p. 7).

Idioms: Liantas (2009) defined idioms as “a form of expression, grammatical construction, phrase, etc., peculiar to a language; a peculiarity of phraseology approved by the usage of the language, and often having a significant other its grammatical or logical one” (p. 2).

Idiomatic Competence: “The ability to understand and use idioms appropriately and accurately in a variety of sociocultural contexts, in a manner similar to native speakers, and with the least amount of mental effort” (Liantas, 2015a, p. 623).

Interactive E-Books: This study utilized “a web-based technology that allows reading material to be intermingled with interactive games that were intended to boost student comprehension and to keep students engaged with the material for longer periods of time” (Gill, & Smith, 2013, p. 1).

Mixed Methods Approach: Defined as a “research in which the inquirer or investigator collects and analyzes data, integrates the findings, and draws inferences using both qualitative and

quantitative approaches or methods in a single study or a program of study” (Creswell, 2008, p. 526).

Limitations

This study aimed to investigate the effectiveness of an interactive e-book in promoting idiom achievement among L2 learners of the Arabic language in Saudi Arabia. The research considered several limitations that may impact the findings of the current study.

The Idiom Diffusion Model (IDM) has four substages that impact L2 idioms processing, including VP idioms Lexical level (LL), Semi-Lexical Level (SLL), Post-Lexical Level (PLL), and Meta Post-Lexical Level (MPLL). This model helps us recognize the relationship between idioms in L1 and L2 learners regarding idiom comprehension. Researchers addressed the *Idiom Diffusion Model (IDM)* and its impact on developing *idiomatic competence* as a theoretical model to discuss and examine L2 idiom learning (Alshaikhi, 2018; Freyn, 2017; Khoshnevisan, 2019; Khonbi & Sadeghi, 2017; Larsen-Walker, 2020; Z. Li, 2019; S. Li, 2022). However, this study was conducted in the Arabic Language Institution in Saudi Arabia where learners from more than 16 nationalities and 16 different language backgrounds are enrolled in each classroom. This study did not track idioms in each first language and compare them to Arabic VP idioms based on the idiom Lexical Level (LL), Semi-Lexical Level (SLL), Post-Lexical Level (PLL), and Meta Post-Lexical Level (MPLL). This study only explored learners’ VP idioms achievement even though some VP idioms may have lexical and pictorial roots in the learners’ first language. Nevertheless, in the qualitative part of this research, learners were encouraged to report on Arabic idioms that exist in their L1 which, in turn, may further help them to identify and interpret idiom meaning accurately.

This study investigated VP idiom competence and motivation among L2 learners in Arabic linguistic institutions in Saudi Arabia in 2021. This study is limited to the time and location of King Saud University in Saudi Arabia. Future research may explore L2 VP Arabic idiom learning in other institutions in Saudi Arabia or in other countries which may lead to different findings.

Summary

In this chapter, I provided an overview of the importance of idiom learning in L2 settings. Before establishing a long dissection of Arabic idioms in the literature review, I highlighted the issue of idiom terminology in both the Arabic and English languages. I addressed various definitions of idioms based on research approaches and purposes. Among more than 73 terms used in research to define and discuss idioms, I introduced the term *Vivid Phrasal Idioms (VP)* coined by Liantas (1999, 2002a, 2015a, 2017a, 2017a). I also discussed the distinguishing differences between VP idioms and other types of figurative expression based on Liantas's (1999) VP idioms definition and categories. I reviewed Liantas's (2002) *Idioms Diffusion Model (IDM)* of L2 Acquisition as the first theoretical model that focused on L2 idiom understanding. Furthermore, I addressed the notion of idiomatic competence as a crucial concept that deals with the ability of L2 learners to comprehend and produce idiomatic competence in authentic situations with less mental effort (Liantas, 2015a). This chapter finally discussed the research that utilized the IDM model and applied different technology-based tools to provide additional evidence in the development of L2 idiomatic competence.

CHAPTER 2: LITERATURE REVIEW

Idiomatic expressions are used in research to investigate a variety of issues related to idiomatic processing, comprehension, production, teaching methods, and technology-enhanced idioms learning. In this chapter, I discuss various idiomatic models that were introduced to specifically clarify L2 idioms processing. Furthermore, I identify various studies that helped shape understanding of L2 idioms comprehension and production, as well as some critical factors that affect idioms processing. In the second part of this chapter, I address the theoretical background utilized herein to guide the current study. I also review major findings in studies that focused on technology for the acquisition of the Arabic language. E-book was the technology utilized in the current study; therefore, I highlight recent research findings that explore the effectiveness in using e-books in education and language learning.

Idiom Processing Models

A small number of studies examined L2 idiomatic processing based on psycholinguistic models compared to studies that fully concentrated on L1 idiomatic processing (Gibbs, 1980; McElree & Nordie, 1999; Kim, 2016). A series of studies conducted by Liontas (1999, 2001, 2002a, 2002b, 2002c, 2002d, 2002e, 2003, 2007, 2008, 2015a, 2015b, 2017, 2019) offered a coherent set of results based on experimental evidence that are comprehensively articulated through L2 idiomatic processing, learning, and teaching. In Liontas's previous studies, an essential concept was introduced to address notable gaps in the field of idiomaticity which were used to facilitate the processing model, namely the *Idiom Diffusion Model (IDM)*. Liontas (2002a) argued that the IDM only highlighted specifically idioms processing in the L2 context, and it is not related

to L1 language acquisition. He claimed that taking account of IDM findings can assist L2 researchers and L2 English and foreign language teachers to recognize L2 idiomatic processing strategies by paying attention to the role of context and using authentic materials in the learning of idioms. Moreover, Liantas (2002a) encouraged researchers to look over the effects of utilizing technological applications, such as Computer-Assisted Language Learning (CALL), Mobile Assisted Language Learning (MALL), Artificial Intelligence (AI), Virtual Reality (VR), Augmented Reality (AR), and Natural Language Processing (NLP) to facilitate idiomatic learning and enhance L2 idiomatic competence. The concept of idiomatic competence in L2 learners is what Liantas (2015a) described as “the ability to understand and use idioms appropriately and accurately in a variety of sociocultural contexts, in a manner similar to the native speakers, and with the least amount of mental effort” (p. 623). Before diving into the studies that utilized the IDM, the following are several aspects that should be addressed related to the significant contribution of the IDM model in research on idiomaticity:

- (1) The IDM is the first psycholinguistic model that fully established a systematic view of L2 idiomatic processing in the field of second language acquisition. This model is applied in various languages such as English, Spanish, German, French, and Greek (Liantas, 1999, 2002), Korean (Türker, 2016), Chinese learners of English (Z. Li, 2019; S. Li, 2022), and Arabic learners of English language (Alshaikhi, 2018; Moreb, 2022).
- (2) The IDM highlights a specific type of idioms called Vivid Phrasal (VP) idioms introduced by Liantas’s studies (1997, 1999, 2002a). He provided a specific definition to clearly distinguish VP idioms from the rest of expressions found in idiomatic research. Liantas’s studies inspired researchers to utilize the IDM and conduct research in L2 idiomatic learning and teaching (Alshaikhi, 2018; Asl, 2013; Carrol et al., 2018; Freyn,

2017; Khonbi & Sadeghi, 2017; Khoshnevisan, 2019; Z. Li, 2019; S. Li, 2022; Wong & Looi, 2010).

- (3) The IDM defined the *Conceptual Semantic Image (CSI)*. The CSI, according to Liontas (2002a), clarifies “how close or how distant a target-language idiom is from its equivalent native-language idioms both conceptually (i.e., in terms of the picture it evokes) and semantically (i.e., in terms of the literal meaning of its words)” (p. 78). Therefore, three subcategories of VP idioms were identified, including the Lexical Level (LL), the Semi-Lexical Level (SLL), and the Post-Lexical Level (PLL). The CSI highlights the recognition of VP subcategories that exist in various languages, including the Arabic language.
- (4) The IDM considers the context of the idiom as a crucial factor facilitating comprehension and production of VP idioms. At the LL, learners need a limited context to grasp L2 figurative meaning because L2 learners can apply a smooth cross-linguistic transfer to understand the LL meaning. However, learners at the SLL need to receive adequate contextual support because they may have limited clues in their L1 to make meaningful inferences. In contrast, learners at the PLL require not only contextual support, but they also require more scaffolding to understand the figurative meaning. Here, learners may face situations where they do not recognize idioms that are equivalent in their L1 or they may not find equivalent idioms that carry different mental images (Liontas, 1999, 2017a). Within these conditions, Liontas (1999) explained that the learner employing PLL idioms will “come to rely primarily on the semantic, syntax, pragmatic contextual cues, and draw upon his or her own native idiomatic knowledge and previous language and sociocultural experience before assigning a definite meaning on this PLL idioms” (p. 188).

- (5) The researchers utilized the IDM to reinforce L2 idiomatic learning for the purpose of achieving idiomatic competence (Alshaikhi, 2018; Asl, 2013; Carrol et al., 2018; Freyn & Gross, 2017; Khonbi & Sadeghi, 2017; Khoshnevisan, 2019; Z. Li, 2019; S. Li, 2022; Wong & Looi, 2010).
- (6) The concept of idiomatic competence shifts attention from focusing only on single words to promote learning idiomatic expressions. The essence of idiomatic competence involves deep understanding of the target language because it “includes both linguistic (phonology, morphology, syntax, semantics) and pragmatic (nonlinguistic, paralinguistic, sociolinguistic/functional, discourse, personal/world, intra/intercultural) knowledge” (Liontas, 2015a, p. 625). Thus, learning idioms goes beyond learning linguistic aspects of the target language. Idiomatic knowledge can offer a substantial advantage in effective communication with native speakers. As Liontas (2009) states “[w]hile knowledge and correct usage of idioms are not absolutely necessary for one to communicate effectively, they are the make of competent speaker” (p. 2).
- (7) The IDM shifts researchers’ attention to utilize alternative approaches in teaching idioms that involves the use of technological tools (Alshaikhi, 2018; Z. Li, 2019; S. Li, 2022; Khoshnevisan, 2020; Larsen-Walker, 2020; Liontas, 2002a, 2006, 2008, 2017b). Liontas (2007) stated “understanding idiomaticity in CALL addresses this gap in an effort to foster a new kind of CALL knowledge concerning the reconstructive nature of idiomatic understanding and production in English” (p. 38). Taking an advantage of Liontas’ observations, various researchers who utilized the IDM focused on examining effects of technology in VP idiomatic learning and teaching in L2 settings, such as using MALL through the *WeChat* app for learning English as a foreign language (EFL) to promote

idiomatic competence (Li, 2019), scaffolding Chinese English learners' idiomatic competence via Ediom Mobile app (S. Li, 2022), utilizing textual enhancement to enhance processing and learning of multiword expressions (Alshaikhi, 2018), applying Augmented Reality (AR) to promote achievement of idiomatic expressions and motivation among Iranian L2 learners (Khoshenvisan, 2020). And using movie clips to understand VP idioms' meanings (Alghamdi, 2022).

Studies Utilizing the Idiom Diffusion Model (IDM)

Liontas (1999) created the Idiom Diffusion Model (IDM) to examine the reading process of L1 English learners facing L2 idioms in three languages: French, German, and Spanish. His objective of creating the IDM was to help distinguish between readers in L1 and L2 regarding cognitive semantic images of idioms. Doing so provides evidence that learners require a degree of clarity for idioms exhibiting contextual support to grasp the figurative meaning of idioms correctly. By applying quantitative and qualitative approaches, Liontas was able to report learners' preferable strategies in L2 idiomatic processing after the participants' interaction with various tasks including the Idiom Detection Task, the Zero Context Task, and the Full Context Task. The participants in this study were L2 learners of French, Spanish, and German. The researcher designed the *It's ALL Greek to Me* software to host the target idioms based on the three levels (LL, SLL, PLL) discussed. The participants received the same number of the target idioms and texts with the exception of two treatment groups which were the Computer Assisted Interactional + Video (CMIV) and Computer-Mediated Interactional (CMI) group. The findings indicated that L2 learners preferred to rely on several reading strategies, including translation, contextual support, and using the literal meaning of idioms. While learners reported low achievement in identifying the PLL meaning of idioms in

the Zero Context Task, all learners reported better achievement in recognizing the LL, SLL, and PLL idioms meaning in all target idioms in the Full Context Task.

It is crucial to recognize other models that help to facilitate the understanding of L2 idiomatic processing. For instance, *The Dual Idioms Representation (DIR)* model was introduced by Abel (2003) who compared between German L2 learners of English and native English speakers regarding the aspect of decomposability of English idioms. Her rationale of creating the DIR model was to clarify the differences between L2 learners and native language speakers in idiom comprehension and processing at the conceptual and lexical levels. She also mentioned that following observation of the IDM, (a) at the lexical level, the IDM acknowledges specific entries including idioms and constituents; (b) idioms decomposability and frequency are crucial factors that facilitate idiom representation at the lexical level; and (c) the frequency of exposure to idioms leads to notable differences in idioms processing between native speakers and L2 learners.

The earliest psycholinguistic models and hypotheses concentrated on L1 idiomatic processing. For example, Bobrow and Bell (1973) proposed the *Literal First Hypothesis*, Swinney and Cutler (1979) presented the *Lexical Representation Hypothesis*, Gibbs (1980) introduced the *Direct Access Model*, Cacciari and Levorato (1989) proposed the *Configuration Model*, Gibbs (1989) emphasized the *idiom Decomposition*, Giora (2002) addressed the *Graded Salience Hypothesis*, and Van Lancker Sidtis (2004) introduced the *Dual Route Model*. In the last two decades, various psycholinguistic research on L2 idiomatic processing has described idiomatic expressions in L2 learning (Cieślicka, 2006, 2015; Conklin & Schmitt, 2008; Schmitt & Underwood, 2004; Siyanova-Chanturia et al., 2011; Underwood et al., 2004). For instance, Cieślicka (2015) examined idiomatic processing and comprehension based on students' interactions with L1 and L2 idiomatic contexts. She introduced the term *Parasitic Mechanism* to

explain the development of L2 figurative competence. The result of her study indicated that various factors affect L2 idiomatic processing including idiomatic literal plausibility, the salience of literal meaning, and idiom context as crucial factors in facilitating L2 idiomatic comprehension.

By applying the eye-tracking technique, Siyanova-Chanturia et al. (2011) explored figurative and literal idiomatic processing in native speakers and non-native speakers of English. The participants learned through figurative expression embedded in figurative contexts, literal expression presented in literal contexts, and authentic context of novel phrases. The eye-tracking data reported which group passed the reading time, fixation count, and total time spent on reading. The results of this study addressed the following observations: (a) native English speakers were fast in processing figurative and literal expressions but slow in matching novel phrases; (b) non-native speakers appear to have a lack of idiomatic processing advantage compared to native English speakers; (c) non-native English speakers spent much time on figurative expressions context compared to literal idioms context.

Idiomatic processing studies utilized a variety of methods to provide a significant contribution to understand strategies that L2 learners employed to comprehend idioms. For instance, Liontas (1999) provided a specific psycholinguistic model, IDM, that helps to understand L2 idioms processing strategies. Siyanova-Chanturia et al. (2011) highlighted L2 difficulties in processing figurative expressions compared to native speakers. Based on the analysis of several studies (Cieślicka 2006, 2015; Siyanova-Chanturia et al., 2011; Cooper, 1999; Liontas, 1999, 2001, 2002a, 2015a), context appears to be an important factor in L2 learners guessing the figurative meaning. At the same time, those studies argued that the L1 models of idiomatic processing are not applicable to L2 idiom learning because L2 learners applied heuristic strategies to comprehend the target idioms (Kim, 2016). Among various strategies, Cooper (1999) indicated

that L2 learners utilized the “guessing from context” strategy to be as much as 28% of the total strategies used. However, Liontaas (2002c) examined various strategies that L2 learners employed to comprehend idiomatic expressions. The findings indicated that participants had utilized translation, guessing, and relying on contextual cues to create meaning of the target idioms. Liontas indicated that several factors could affect transferring knowledge of idiom in L2 such as vocabulary knowledge, the degree of transparency, graphophonics, and the literal meaning of the target idioms.

L2 Idiom Production

The earliest research focused on idioms production in L1 settings (Cacciari & Levorato, 1989; Gibbs, 1989; Levorato & Cacciari, 1995). For instance, Levorato and Cacciari (1995) explored the process in which children develop understanding of literal idioms to the ability of producing figurative expressions. Children in second and fourth grade levels received three experimental treatments that included a comprehension task, a recall task, multiple choice task, and an idioms production task. The findings indicated that older children perform better in figurative tasks. However, all children showed difficulties in idioms production.

L2 idiom production deals with the ability of learners to accurately express target language idioms in authentic situations. The ability to reach this level of competency may differ depending on the age of the L2 speakers. According to Conner et al. (2001), there is a positive correlation between learner age and the accuracy in idiom production. In their research, the participants were divided based on their ages, including 40 participants aged 60–85 and 40 younger participants aged 18–30. All the participants were required to produce idiomatic expressions through a story-completion task. Although older participants showed partially accurate production, the younger

participants were able to produce a target idiom task. The findings also suggest that acquiring idiomatic competence continues up to adulthood.

Other studies investigated idiomatic comprehension and production in both second and foreign language classrooms (Kim et al., 2017; Stengers et al., 2016; Vasiljevic, 2015; Xie, 2017). For example, researchers have examined the similarities between idioms in different languages and how they affect idiom production (Yeganehjoo et al., 2012), the production of ambiguous idioms (Siyanova-Chanturia & Lin, 2018), the effect of age difference on idiom production (Conner et al., 2011), the various tasks in the comprehension and production of idioms in children (Levorato & Cacciari, 1995), the relationship between language proficiency and the understanding of collocations (Namvar, 2012), and using English idioms to promote vocabulary development (Mcpherron & Randolph, 2014).

To produce fluent and meaningful communication in the target language, learners should acquire knowledge of idiomatic expressions (Giora, 2002; Sprenger et al., 2006; Kempen, 2006; Yeganehjoo et al., 2012). While learners already have access to their L1 lexical and semantic knowledge (Namvar, 2012), the production of idioms may be affected by the degree of similarity in idiomatic concepts between the L1 and L2 languages (Yenganehjoo et al., 2012). In other words, learners can benefit from focusing on common idiomatic concepts that share similarities in L1 and L2 languages. By applying such comparisons, learners can comprehend L2 idiomatic expressions faster and more accurately by accessing shared knowledge in their L1 and L2 languages (Yeganehjoo et al, 2012).

Although some idiomatic expressions can be found in various languages, plenty more do not share exact linguistic and semantic meaning. Thus, having prior knowledge of L1 idiomatic

expressions can facilitate L2 idiom comprehension regarding idioms that share linguistic and cultural similarities. In this regard, Liantas (2001) proposed the following hypotheses: (a) *Idioms-Matching Hypothesis* assumes that if L2 idiomatic expressions exist in learners' first language, learners will attempt to make meaningful connections between L2 expressions and their equivalent meaning in the learners' mental lexicon. Based on the *Idioms-Matching Hypothesis*, native English speakers will assign meaning to L2 Arabic expressions such as قضي بحجر عصفورين على (to kill two birds with one stone) by attempting to transfer knowledge from their L1 to L2 languages. In this process, "the learner will make use of his bottom-up processing skills first before assigning meaning to an L2 expression. Transfer of knowledge from L2 to L1 and vice versa is strongly anticipated" (Liantas, 2001, p. 3).

Conversely, the *Non-Matching Idioms Hypothesis* deals with idiomatic expressions that do not exist in L2 learners' first language and expressions that exist but appear to show different thought patterns or cognitive images. Based on this hypothesis, to assign meaning to L2 expressions, learners will rely on contextual cues such as semantic, syntactic, and pragmatic evidence and analyze the meaning using their background knowledge and sociocultural experience. This process appears in this following direction: "the learner will first make use of his bottom-up processing skills, and upon semantic hindrance or ambiguity, he will then attempt to feed back down (top-down processing) to his existing lexicon by solidifying his interpretation(s) of the L2 idiomatic expression on the greater contextual framework for that particular expression" (Liantas, 2001, p. 3).

Yeganehjoo et al. (2012) explored the effects of focusing on cross-linguistic similarities in idioms on L2 learners' ability to store and produce idiomatic expressions. The participants were 27 L2 English learners from Iran. The participants interacted with auditory

clips that showed either similarities in conceptual or lexical level in L1 and L2 languages regarding idiomatic expressions. The result indicated that learners spent less time in the production of idioms that contain similarities at the lexical level in L1 and L2 languages. Therefore, L2 learners are more likely to comprehend and produce idioms that have cross-linguistic similarity in their L1.

Factors Affecting L2 Idiom Processing

Research in idiomaticity acknowledges the difficulty of learning L2 idiomatic expressions in general and L2 idioms in particular (Cieślicka, 2006; Conklin & Schmitt, 2008; Liontas, 1999, 2002a, 2015a; Warry, 2000). Idioms appear frequently in native speakers' discourses and show less frequency among L2 learners (Pawley & Syder, 1983). Liontas (1999) highlights that all spoken language today utilizes idioms that are based on social, historical, or political background.

However, research indicates that L2 idiomatic processing is impacted by various factors such as familiarity, frequency, transparency, and context (Hubers et al., 2022; Siyanova-Chanturia & Spina, 2015). It is important to note that in various studies, the data collection of idiom properties stemmed from learners' perspectives based on judgment scales (Hubers et al., 2020; Libben & Titone, 2008; Nordmann et al., 2014).

Familiarity and Frequency

Idiom familiarity deals with the extent to which native speakers or L2 learners indicate familiarity with idiomatic expression meaning (Hubers et al., 2020; Libben & Titone, 2008). However, the frequency of use of idioms is related to people's indication of how often they encounter idioms in authentic contexts (Abel, 2003; Hubers et al., 2020). Although idiom frequency can be measured using an objective tool, such as corpora, providing accurate

information about idioms is still a challenging task. Due to idioms having a flexible and complex nature (Hubers et al., 2019) in which idiomatic expressions appear in different word orders across languages and dialects, idiom collection based on corpora data may not reflect the accurate frequency of idioms in a particular society. For instance, it is notable that some idioms have different words based on specific dialects such as the Saudi dialects and Egyptian dialects of Arabic language. Thus, L2 learners may have less exposure to idioms in authentic contexts (Ellis, 2012; Hurbers et al., 2020). It is crucial to enhance learners' awareness of idioms through explicit and implicit idiomatic expression instruction. Learners often fail to notice idiomatic expressions that contain familiar words more than idiomatic expressions that have unfamiliar words (Kim, 2016; Hurbers et al., 2020; Laufer, 2000).

Transparency

Idiom transparency is often related to the degree to which the figurative meaning of the whole expression can be comprehended based on the semantic meaning of its individual words (Hurbers et al., 2020; Sentinel et al., 2007; Xie, 2017). Transparency can be measured by asking native speakers to indicate if they “consider an idiomatic expression as related to its figurative meaning” (Skoufaki, 2008, p. 20). When the literal interpretation of idioms helps to identify the figurative meaning, idioms will be described as transparent, but when literal meaning and figurative meaning show different interpretations, idioms will be classified as opaque (Xia, 2017). For instance, the VP idiom, *spill the beans*, appears as an opaque expression because the figurative meaning, *to disclose a secret*, cannot be derived from the literal interpretation. The expression, *to get away with murder*, is transparent because the figurative meaning, *to escape punishment after doing something serious*, can be extracted from the literal interpretation (Hurbers et al., 2020; Xia, 2017).

It is important to note that L2 learners and native language speakers may indicate different judgment of idiomatic transparency. As idiomatic expressions contain linguistic and cultural knowledge of the target language (Hurbers et al., 2020; Kovecesse & Szabo, 1996), transparency intuition of idioms is expected to be different in L1 and L2 (Hurbers et al., 2020). Nordman et al. (2014) conducted a comparative study that explored L2 learners' and native speakers' judgments of semantic decomposability of idioms. The results showed that advanced L2 learners found idioms to be less decomposable and less literal than native English speakers. Conversely, the findings of a study by Carrol et al. (2018) concluded that native speakers judged idioms to be less transparent than L2 learners.

Steinel et al. (2007) examined the impact of transparency on L2 idiomatic comprehension by utilizing paired-associate learning (PAL). The participants were L2 English learners in a Dutch University who received twenty idiomatic expressions in English. The target idiomatic expressions varied in transparency. The findings showed that L2 learners comprehended high-level transparent idioms more than intermediate and low-level idioms.

Cross-Language Overlap

Cross-language overlap is a crucial factor in L2 idiomatic processing because it shows the extent to which idiomatic expressions exist or have equivalents in the learners' L1 language (Cucchiaroni et al., 2020; Liontas, 2002a, 2015a). While L2 idioms that have an equivalent in L1 appear to be less difficult in comprehension (Carrol et al., 2018; Laufer, 2000; Liontas, 1999, 2002a), the production of those idioms appears to be a challenging task due to the interference of L1 (Hurbers et al., 2020; Liontas, 2002a; Yorio, 1989). Yprio (1989) indicated that Spanish learners of L2 English showed less difficulty in producing identical idioms and this occurs because of L1 interference.

Charteris-Black (2002) addressed a distinction between linguistic similarity and conceptual similarity in L1 and L2. He found that idiomatic expressions with equivalent linguistic structure and equivalent concepts appeared to be the easiest for idiom comprehension and production based on multiple-choice tasks and cued production tasks. In contrast, idioms that have different linguistic structures and concepts were the most difficult tasks for comprehension and production.

Idioms in Context

Researchers in the idiomaticity field explored the role of contexts in learning idioms based on learners' L1, such as the effect of context on the comprehension and interpretation of idioms (Ackerman, 1982; Cacciari & Levorato, 1989; Gibbs, 1989; Levorato & Cacciari, 1992; Liontas, 2003; Nippold & Martin, 1989; Qualls & Harris 2003; Ortony et al., 1978). Comparing between short and long context, Ortony et al. (1978) indicated that the participants spent more time trying to comprehend metaphorical phrases than literal phrases. Ackerman (1982) explored children's idiomatic comprehension by highlighting the role of context and conversational forms. The findings indicated that children ten years of age and older could understand idiomatic context, whereas younger children between 6 and 8 years old, could only comprehend words and sentences in the context of the idiom provided.

In the L2 setting, Liontas (2003) investigated the role of context in promoting idiomatic comprehension among Spanish learners. The results showed that context was a critical factor in reaching idiomatic meaning. Similarly, research provides evidence that context supports idiomatic comprehension in a second language classroom. Liontaas (1999) addressed various strategies that L2 learners employed to comprehend idiomatic expressions in context and out of context in reading text such as translation, guessing, and relying on contextual cues to create meaning of the target idioms. Cooper (1999) examined idiomatic processing strategies and found that ESL

learners frequently employed guessing from context strategy to select idiomatic meaning. Furthermore, Alshaikhi (2018) examined the effect of textual enhancement on idiom learning and identified type of strategies that L2 English learners utilized to comprehend idioms. The findings indicated the significant impact context has on idioms comprehension.

Theoretical Background of E-book

Theoretical frameworks not only guide researchers to frame the research problems but also create a better understanding of research results. In this study, there are three major theoretical frameworks that facilitated the understanding of using an interactive e-book to learn Arabic VP idioms, including *The Dual Coding Theory* (1990), *The Constructivist Learning Theory* (1978), *The Cognitive Theory of Multimedia Learning* (2001), and *The Transactional Idiom Analysis (TIA)* (1999, 2002).

The Dual Coding Theory (DCT), initially proposed by Paivio (1990), was based on the idea that the human brain operates in two channels, verbal and visual. Although those two channels are functioning independently, they interact during the learning process. Visual information will be stored in visual code and verbal information will be processed and stored in verbal code in the human brain. Based on this theory, input presented through verbal and visual representation can be stored and recalled more easily than input provided in one channel only. Provided verbal vocabulary and idioms are associated with images, learners can make connections between verbal and visual input. Consequently, storing idioms in verbal and image channels can enhance L2 learner's retention of the target VP idioms.

The Dual Coding Theory influenced cognitive theories in the last two decades. Enormous studies have been conducted to examine students' learning processes in their writing and reading from psychological perspectives (Vasiljevic, 2015). As input can be stored visually and verbally,

there was a strong correlation between the imagery of words and their memorability in which concrete vocabulary was found to be easier to recall compared to abstract ones (Vasiljevic, 2015). Despite the utilization of the DCT in research, it received criticism regarding the limitation of the cognition process being limited to verbal and visual coding only (Flanagan, 1984; Kintsch et al., 1977). Audio input should be another coding system added to DCT as it aligns with word and image coding systems (Thomas, 2014). According to DCT, during the learning process, three channels are activated simultaneously: (a) the representational channel that deals with recognizing the verbal input, (b) the referential channel in which learners connect pictures with applicable words to help in comprehension, and (c) the associative channel that provides a mental connection between words.

The Constructivist Learning Theory (CLT) is another crucial framework that guides the current study. CLT highlights the role of the learning process in developing learners' cognitive development (Vygotsky, 1978). Instead of a teacher controlling learning, in the CLT approach, learners construct knowledge based on context and cultural background. In an e-book learning environment, learners will build on their own experience to contract knowledge by interacting with e-book features such as pictures, authentic contexts, texts, discussions, and activities. L2 learners of the Arabic language will engage in an interactive environment that offers opportunities for learners to use idioms in a real-world situation. Another opportunity for learners to contract knowledge is to engage in experience by observing learners' interactions in e-book discussions. Thus, the e-book discussion feature motivates learners to share their own background experience in learning idioms and add additional resources to reinforce idiom learning. Although learning is based on learners' individual efforts, the Arabic instructor will work to guide learners to understand the use of an e-book environment, facilitate learners' interactions in discussions, and

help learners to connect their background knowledge of L1 idioms to construct new L2 idiomatic information.

The Cognitive Theory of Multimedia Learning proposed by Mayer (2001) is another crucial theory that helps to explain various principles that can be applied to provide effective language learning in e-book environments. The contribution of Dual Coding theory (Paivio, 1990) and Cognitive-load Theory (Sweller, 1988) have influenced the construction of Cognitive Theory of Multimedia Learning (Yang Yang et al., 2013). For instance, the Cognitive Theory of Multimedia highlighted two channels for processing new information that are visual and auditory channels. These two channels are discrete and have limitations. However, Mayer (1997, 2001) argued that effective learning in multimedia environments appears in the learners' process of selecting relevant information, organizing knowledge to create mental representations, and integrating existing and new representations of knowledge. Mayer (2001) highlights the role of prior knowledge and experience to learn through nonverbal representation such as pictures, narrations, and animations.

The Cognitive Theory of Multimedia Learning informs the researcher that processing new information can be enhanced using a combination of text and pictures. Based on the multimedia principles, learning through a combination of pictures and words can enhance learning more than only learning in words (Mayer, 2010). In addition, this theory informs the researcher of the importance of considering multimedia principals to provide an opportunity for effective learning. In an interactive e-book, various aspects of multimedia principals are integrated, such as VP idioms, text, and pictures.

The Transactional Idiom Analysis (TIA) proposal by Liontas (1999, 2002a) is another theoretical analysis I adapted in the current study. The TIA provides insights into strategies that L2 learners utilized to comprehend the target VP idioms in authentic content. Liontas (1999)

highlights the rationality of TIA which is to address adequately L2 idiomatic competence and identify learners' systematic pattern in developing and controlling L2 idiomatic knowledge. Liontas (2002a) argued that TIA contains four cueing systems including the graphophonic, the lexico-grammatical, the semantic, and pragmatic (Liontas, 2002b). In TIA, various factors impact the meaning-making process such as readers' prior knowledge, readers inferencing, and the role of activities. According to Liontas (2002b),

TIA is concerned both with what learners know about idioms in general and with what they know about how they are used in communication. It is especially concerned with identifying the factors that impede or enhance idiom comprehension and interpretation. The only way to obtain good data on these factors, however, is through the systematic observation of learners: TIA provides an approach of analyzing such observations in a manner that can reveal the linguistic systems that learners use to process idioms. TIA analyses are very promising because they seem to afford a window through which to view how learners comprehend and interpret idioms in second language contexts. (p. 26)

Technology in L2 Teaching and Learning of Arabic Language

Arabic has been considered an official language in the United Nations since 1973 with over 300 million native speakers in twenty-two Arabic countries (Al-Huri, 2015). However, advanced technology applications today show little attention regarding L2 learning and teaching of the Arabic language. To promote learners' communicative competence as a recognizable purpose of L2 Arabic learning, using technology, and integration technology into learning environments, such as an e-book, and educational games, can provide effective learning experiences to maximize learners' language skills.

In the field of second language learning (SLA), Computer-Assisted Language Learning (CALL) provides various tools that can be utilized to promote learners' communicative competence. CALL applications are fully focused on language learning and are defined as "learners learning a language in any context with, through and around computer technologies" (Egbert, 2005, p. 4). Gençlter (2015) and Ahmadi (2018) highlighted the effects of using computer-based activities in enhancing learners' motivation and supporting the integration of authentic materials in CALL environments. In addition, utilizing CALL applications to provide suitable activities can improve L2 cooperative learning skills (Alsofyani, 2019).

While various studies investigated the effectiveness of technology in L2 English learning and teaching (Abrams, 2002; Ahmadi, 2018; Larsen-Walker, 2020; Liontas, 2017; Weininger & Shield, 2003), few studies have been conducted to examine the impact of technology in teaching and learning Arabic as a second language (hereafter ASL) and Arabic as a foreign language (hereafter AFL). Ahmadi (2018) emphasized the need for technology tools for learning Arabic. While several applications available today serve the English language users and learners, Ahmadi argued that instead of observing the trend of instructional technology products, experts in the Arabic language should create new innovations for the purpose of ASL learning and teaching.

Zawawi (2008) explored the use of instructional technology in Arabic classrooms in several secondary schools in Malaysia. He found a lack of web-based aids being used among L2 language teachers of Arabic language. He highlighted teachers' preferences to avoid using instructional technology applications due to the time and effort needed to prepare the materials. However, these conditions may not exist in other Arabic teaching environments. For example, Omari (2015) found most Arabic teachers in the United States utilized technology in their classes

(74.53%, n=80). Arabic teachers described technological applications as effective tools capable of boosting learners' language skills (Omari, 2015).

Omari (2015) conducted a study on the implementation of technological applications among Arabic instructors in the United States. The author used a mixed methods approach to examine Arabic instructor attitudes in utilizing technology. The participants were 106 Arabic instructors who completed a survey following an interview with selective participants. The results showed that 74% of teachers utilized technology in the Arabic classroom. Arabic teachers reported delivering the contents through a Learning Management System (LMS), such as Blackboard and Moodle, using online applications for teaching Arabic in terms of blogs and Wikis, as well as providing students with Arabic tutorials, such as Arabic Academy, Arabic2000, Sakhr, and Scola. The qualitative findings addressed teachers' beliefs that students were engaged and proficient in using technology. Consequently, because L2 learners of Arabic language had enough opportunities to speak Arabic, technology helped L2 learners improve their pronunciation skills through online assignments.

Furthermore, Sahrir et al. (2013) designed a virtual learning prototype to teach Arabic for a primary school in Malaysia. The purpose of designing this virtual learning tool was to create additional resources to support and complement traditional classroom teaching. It contains various learning tools such as a textbook e-book, learning games, video and audio contents, online translation tools, and online discussions. Language teachers expressed the benefits of using this online tool because learners have more time to practice learning Arabic.

Binasfour (2018) explored the effects of technology-based instruction in developing L2 learners' pronunciation skills and perceptions of Arabic language. The participants were 38 adults female L2 learners of Arabic at Princess Nourah University in Saudi Arabia. The materials that

contain the target Arabic vocabulary were presented using speech software for the experimental group and through paper handouts for the control group. Data was collected through word identification tasks and an audio recording of learners' pre-and post-test. The findings showed that learners experienced difficulties in the production of emphatic sounds. While the result revealed that there is no statistical significance of using technology-based instruction, both experimental and control groups showed improvement in their overall production of Arabic sounds.

Table 2

Example of Research That Focus on Using Technology for Learning Arabic

Study/Date	Technology Used	Research Focus/Technology	Findings
Sahrir et al (2013)	Virtual learning environment	Providing additional resources that complement the traditional Arabic classroom teaching	There were benefits to Facilitating Arabic learning using a variety of learning tools such as e-books and educational games
Omari (2015)	The participants reported using a variety of tools to teach Arabic such as Blackboard, Moodle, blogs, Arabic Academy, Sakhr, and Scola	Investigating technology used and attitudes among Arabic instructors in the United States	Many Arabic instructors utilized various technological tools and reported positive attitudes regarding the importance of learning Arabic through technology
Binasfour (2018)	Technology-based instruction	Exploring the effects of technology-based instruction in developing L2 Arabic learners' pronunciation skills	All participants showed improvement in their overall production of Arabic sounds
Zawawi (2008)	Instructional Technology	Exploring the use of instructional technology in Arabic classrooms	Teachers avoid using instructional technology applications due to the time and effort needed to prepare the materials

Idiomatic Research in the Arabic Language

Although Arab countries share the Modern Standard Arabic (MSA) in formal settings, idiomatic expressions such as proverbs are expressed differently from region to region. Jaradat (2007) investigated the linguistic aspects of proverbs, including pragmatics, syntax, and style in Jordan. The author concluded that proverbs appeared to have limited syntax, formulas, and structures borrowed from MSA. In the contextual use, Jaradat identified several functions of proverbs in Jordanian conversation, such as supporting a previous argument, promoting social values, and authenticity.

Alqahtani (2014) examined the variations of idiomatic expressions in the Arabic language by analyzing a Saudi newspaper called *Al-Riyadh*. This newspaper used MSA as its official language. Alqahtani adapted Moon's (1997) framework that focused on fixedness of idiomatic expressions and placed a corpus of 440 targeted idioms into categories based on idiom variations with the goal of finding common aspects that can convey the meaning of the figurative expression. The analysis of these idioms revealed (a) the possibility of structure change of idiomatic expressions such as transformation or substitution, (b) idiomatic expressions are subject to Arabic grammar rules, and (c) idiomatic expressions that contain the word 'head' helped convey the meaning of the idioms.

The repetition of certain words within a variety of idioms provides interesting insights into aspects of sociocultural and semantic feature idioms. For example, Torlakova (2008) conducted a semantic analysis of idioms that contain the word "weapon" in the Arabic language. These idioms were divided into two groups: behavioral idioms and situational idioms. Situational idioms are idioms expressed in specific situations such as سبق السيف العذل (literally, *the sword outruns censure*;

figuratively, *it is too late to do something*), Behavioral idioms are idioms that involve actions such as *أخرج ما في جعبتك* (literally, *to empty one's quiver; figuratively, to show one's resources*). The author indicated that the word *weapon* was utilized as a constituent in some idioms with different terms such as “bow,” “sword,” “knife,” and “arrow.” Moreover, the majority of these idioms showed enormous applications that were not restricted to the idea of war and violence.

The majority of the idiom research that combined the English and Arabic languages in L2 learning focused on the area of idiom translation (Menacere, 2012; Salamah, 2015). For example, Menacere (2012) discussed the problems encountered by participants in translating Arabic metaphors related to cultural concepts. Although cultural differences can create difficulties for translating Arabic metaphors, the author confirmed that difficulties appeared in two areas: (a) when a particular form of behavior existed in one culture but not in another culture, and (b) when the same cultural concepts and behaviors are treated and interpreted differently in various cultures.

Salamah (2015) investigated the difficulties in understanding and translating idiomatic expressions among female translators studying at King Saud University in Saudi Arabia. Moreover, Salamah aimed to classify the type of strategies used by participants in translating idioms and highlighted the type of errors that EFL participants made. The findings indicate that the participants faced difficulties in comprehending idiomatic expressions, as well as translating these idioms. In terms of translation and error, Salamah showed that the participants made several types of errors, such as making the wrong word choice, giving a literal translation, using the same expression in English, and having a miscomprehension of the original meaning. The participants applied several translation strategies for the English idioms, including paraphrasing, literal translation, omission, and using the same English expressions.

Table 3

Example of Research Recruited Arabic L1 and L2 Participants

Study/Date	Subjects/Language	Research Focus/Treatments	Findings
Salamah (2015)	57 women from the English program at King Saud University. Participants were in their 4th and 5th year of study.	English idiom expression translation. Classified strategies used in translation as well as the type of errors. The participants were evaluated based on their comprehension and the strategies used in the translation of the English idioms.	Several errors were noticed including miscomprehension of the original idioms, literal translation, redundancy, omission, and wrong choice of words. Paraphrasing and literal translation appears as the most frequent strategies used in this study.
Daoud et al. (2016)	15 million tweets in the Arabic language on Twitter.	The multiword expressions extracted from Twitter. Corpus-based approach.	Large number (367,838) of valid MWEs.
Mofarrej et al. (2015)	130 adult men and women randomly selected from Irbid and Mafraq.	The use of euphemistic death expression questioners, interviews, and observations conducted to investigate the effect of age, gender, and region in using death expressions.	Social variables affect the use of expressions only in certain situations. Men and women used expressions differently. Bedouin participants used different expressions than rural participants.

Summary of Arabic Idiomatic Studies

The studies reviewed provide valuable information related to idiomatic expressions and language learning: (1) there is a strong correlation between age and the acquisition of idioms as well as the ability and accuracy of producing idioms, (2) L2 learners apply specific strategies to comprehend idioms such as guessing, relying on the context, and analyzing idiom units, (3) the studies reviewed provide evidence of the role of context in the contribution to L2 understanding

of idioms, (4) authentic context in learning idioms was a critical factor that highly affected student awareness, comprehension, and the production of idiomatic expressions in real-life situations. It is argued that “contextual, syntax, and semantic cues, all working together within the organized principles of pragmatic, allow L2 learners to go beyond the literal meaning of an idiom” (Liontas, 1999, p. 99), (5) language learners in intermediate and advanced language proficiency have a better chance of performing idiom comprehension than learners with low language proficiency, (6) even in a language such as Arabic, language and cultural variations hold countless idiom meanings in particular contexts, and (7) a wide range of terminologies were expressed by the researchers in the reviewed studies regarding idiom definitions. However, it is worthwhile to address that the studies reviewed here have made pedagogical implications possible in idiomatic comprehension and production. They also made clear that there are still important gaps that need to be addressed in future research.

E-Books in Education

A considerable number of studies have explored the effectiveness of utilizing e-book learning environment in education (Alsofyani, 2019; Kang et al., 2008; Korat & Shamir, 2010; Woody et al., 2010). Advanced e-book environments can contain interactive multimedia components such as visual and audio materials music, games, pronunciation, glossing, a dictionary, and videos. Furthermore, additional functions programmed in some e-book systems offered an opportunity for educational teachers to provide comprehensive feedback on student progress and record results (Alsofyani, 2019; Sung & Ting, 2017). Furthermore, some e-books have a flexible environment where teachers and students can have access to a variety of materials, such as supporting activities by utilizing interactive e-books. In an intensive reading program, e-

books help to improve students' reading attitudes and literacy skills (Chou, 2016; Safaeia & Bulca, 2013).

In the last decade, there are several electronic devices that are purposely designed to host digital books and electronic materials such as the Sony Book Reader device, Amazon Kindle, and the Nook (Hung & Yong, 2015). These e-book devices gained popularity among readers which leads to creating a variety of e-book devices and apps in the market. Thus, researchers aimed to gain insights into the effectiveness of using e-book reading in education instead of traditional books (Hung & Young, 2015; Wilson, 2003). Similarly, various studies explored online reading on computers as the main source of digital content (Chao et al., 2010; Chou, 2015; Oakley & Jay, 2008; Sun, 2003). Larson (2010) highlighted that digital e-books enhance learners' engagement and interpretation of the contents.

In contrast, several studies reported negative issues in utilizing e-books in the academic domain. The findings of various surveys administered by academic libraries showed negative reactions toward e-books among college students (Mash, 2003; Rogers & Roncevic, 2002). Although there is notable awareness of the availability of e-books, studies showed that college students, faculty, and staff still preferred to use traditional print copy books (Chou, 2016; Spencer, 2006; Woody et al., 2010). For instance, Spencer (2006) surveyed undergraduate and graduate students majoring in business on their reading preferences and habits during an online course. The findings indicated several reasons why students preferred to utilize print copies which were due to those course materials being portable, flexible, dependent, and ergonomic. Another study conducted by Olsen and colleagues (2013) investigated 74 students' perspectives on using either iPad or Kindle DX in doing their reading response assignments. The results indicated students'

satisfaction with using both e-reader devices. However, more than half of the participants indicated that they preferred using print copies in academic studies.

Table 4

Example of Research Findings about e-Book and Printed materials

Researchers	Participants	Findings
Collett (1999)	Graduate and undergraduate adult learners	Most of the students preferred using print materials for reading
Levine-Clark (2006)	LMS e-book learners	More than 60% of users chose print materials over LMS ones
Spencer (2006)	Undergraduate and graduate students majoring in business	Students preferred utilizing printed materials
Woody et al. (2010)	Students enrolled in a psychology class	Learners preferred to read print than e-book materials, however, in learner rating, there were no significant differences between e-Book users and non-users

Previous studies showed several factors that impact students' perspectives and attitudes toward using e-books for learning: (a) users tend to use e-books for enjoyable and free reading more than academic and intensive reading (Chou, 2016; Wilson, 2003), (b) learners reported using e-books for browsing and skimming but preferred printed materials for intensive reading (Chou, 2016), (c) the availability of free printing options through schools and universities offers an opportunity for students to used print materials. Based on the findings of a study conducted by Gibbons (2001), learners highlighted learning through e-books because they can save money and e-books are more convenient, especially when the library is closed, (d) digital literacy may play another factor if learners would not know how to navigate through e-books, and (e) with absence

of interactive features, PDF e-books do not appear to have any advantage over regular print materials.

E-Books as a Language Learning Environment

While the benefits of using e-books in the academic domain are still debatable, second language research reports the advantage of using e-books in explicitly promoting learners' language skills (Chou, 2016). For example, e-books showed an advantage in supporting L2 learners and motivating young readers (Chou, 2016; Day & Bamford, 2002). The results from a study conducted by Shamir (2017) disclosed that reading storyboards helps learners from low economic states to expand their vocabulary knowledge, improve word recognition, and enhance their awareness of word pronunciation. The features of e-books have more advantages compared to regular hardcopies, such as the option for glossaries, and assistance in the pronunciation of unknown vocabulary (Chen & Yen, 2013; Chou, 2016; Reinking 1987). It seems that interactive aspects of some e-books such as animations, pictures, and sounds may create a distractive atmosphere for children (Chou, 2016). However, interactive e-books boosted reading motivation among children (Gkasgow, 1996). E-book functions and features help to get learners' attention and enhance their reading motivation (Chou, 2016; Maynard & MacKnight, 2001).

Researchers examined the impact of using e-book features such as concept mapping in promoting learning comprehension. For instance, Ting and Chen (2017) explored Chinese native speakers' comprehension of classical Chinese after using the concept map function that existed in the e-book system. The findings from qualitative data showed that learners expressed a positive perspective in using concept maps in learning. Similarly, Al-Seghayer (2001) explored the effects of explicit reading support through multimedia features including texts and annotation in prompting L2 vocabulary acquisition. The results showed that L2 learners who learned through text and annotation acquired more vocabulary compared to learners who interacted with text only.

Longitudinal research provides evidence of the effectiveness of integration e-books in English learning programs. Hung (2013) highlighted the positive perspective of using e-books in reading among adult EFL students at the intermediate level. The participants had utilized e-books to read each week for the period of one year. E-book reading in language programs appears to enhance EFL reading motivation and social interaction in an e-book environment. Learners were able to express their opinion in discussion and received teacher feedback. Other aspects of multimedia components such as animation and video have positively affected learners' reading comprehension and helped to reduce the level of anxiety.

E-book environments allow language teachers to integrate various learning approaches for the purpose of developing reading comprehension, listening, and writing skills. Al-Salem (2017) investigated the effectiveness of integrating metacognitive strategies embedded in the e-book system to enhance Arabic reading skills among deaf students in Saudi Arabia. The participants were 18 undergraduate freshman students. The participants were divided into an experimental group and a control group. The participants in the experimental group integrated metacognitive strategies through an e-book system while students in the control group applied metacognitive strategies using traditional printed materials. The researcher used various quantitative instruments to gather the data, including a pre-test, post-test, and survey. The findings were statistically significant showing that the experimental group had greatest scores based on the reading comprehension test. Furthermore, students who utilized metacognitive strategies in the e-book system showed the highest level of engagement, more than students with printed materials.

A similar study was conducted in Saudi Arabia by Alsofyani (2019) to explore the effect of metacognitive strategies-based discussion and collaborative learning activities embedded in the e-book system called IMapBook in promoting EFL reading comprehension skills. All 155

participants were female at intermediate English proficiency level who enrolled in an English language program. The researcher utilized mixed methods approach. The data was collected using the Survey of Reading Strategies (SORS), reading comprehension tests, e-book learning questionnaires, and interviews. The findings indicated that both metacognitive strategy-based discussion and collaborative activities in an e-book environment positively affected learners' reading comprehension. Furthermore, qualitative data disclosed that EFL learners gained an advantage in learning through the IMapBook system in developing reading skills such as focusing on text and reading motivation. Students expressed satisfaction with using IMapBook to develop their reading comprehension.

Wang et al. (2019) explored Japanese learners' visual attention and learning outcomes in learning through interactive e-books. The participants were 60 adult university students who enrolled in the Applied Foreign Language department at the University of Taiwan. The researchers employed an eye tracking technology to track learners' eye movements and store data in the system. Based on the participants' scores in Japanese class, the participants with high scores were assigned to a high prior knowledge (PK) group and the participants with low scores were placed in a low prior knowledge (PK) group. Both groups were observed through eye tracking measurements that collected time spent, number of fixations, delay of first fixation, and total clicks that all participants applied. The results disclosed that both groups spent more time with reading content and understanding visual representation. However, the participants with high PK spent more time in fixation while participants with low PK spent a longer time in visual and annotation. In addition, the number of the total clicks were high with low PK groups especially when they faced unknown phrases and words. Overall, based on pre-test and post-test of students reading

comprehension, the findings show there were significant differences in learner performance in both groups.

Table 5

Example of Research Findings in Using E-book L2 Language Learning

Studies	Research Focus	Major Findings
Ting and Chen (2017)	Learners' perspectives of using a concept map in an e-book system to learn classical Chinese	Students expressed positive perspectives in learning classical Chinese through concept maps embedded in the e-book system.
Al-Seghayer (2001)	The impact of explicit reading support by multimedia features (texts and video annotation) on L2 vocabulary acquisition	Learners who received text and video annotation showed great vocabulary acquisitions more than learners who received text only
Al-Salem (2017)	Investigating the effectiveness of utilizing metacognitive strategies embedded in the e-book system to enhance Arabic reading skills in Saudi Arabia	Learners who utilized metacognitive strategies in e-book systems showed higher performance compared to learners with printed paper only
Alsofyani (2019)	Exploring the effect of metacognitive strategies-based discussion and collaborative learning activities embedded in the e-book system called IMapBook in promoting EFL reading comprehension skills.	Both metacognitive strategies-based discussion and collaborative activities in e-book had positive effects on learners' reading comprehension
Wang et al. (2019)	Examining Japanese learners' visual attention and observing outcomes in learning through interactive e-book.	The findings show there were significant differences in learners' performance among all participants

Summary of E-Book Language Studies

The results of previous studies revealed various advantages of utilizing the e-book environment in L2 language learning. Most of the research agreed that multimedia features can be embedded in an e-book environment to create interactive elements such as terms of text, video annotation, animation, concept map, discussion, and collaborative activities. In addition, e-book environments assist language teachers to apply various techniques to increase reading, listening, and writing skills, such as metacognitive strategies. Digital e-books can change learners' perspectives about reading due to their attractive and convenient features (Schugar et al., 2013). However, verity research focuses on the effectiveness of using e-books to promote EFL reading comprehension. No research, to my knowledge, has been conducted to investigate the impact of using an interactive e-book to enhance the learning VP idioms.

Motivation

In the learning context, motivation plays a critical role in increasing or decreasing the learner's performance. Skinner (1953) viewed motivation as a notable product of environmental learning conditions. However, in the Social Learning Theory, Bandura (1969) claimed that motivation and learning are products not only for environments or individual desire, but also a combination of both. In other words, external and internal conditions have a strong impact on motivation and learning (Gagne, 1985). Those conditions regarding environmental conditions and individual engagement can determine the learners' priorities in learning. Motivation "is in part of a function of the characteristic choices of a person will make for one type of goal over others" (Keller, 1979, p. 28).

Motivation impacts not only the outcome performance but also the process of learning (Kim, 2016), but motivation also effects language learning (Rueda & Chen, 2005). Despite the

existence of various definitions of motivation, it is still one of the most discussed topics regarding language learning (Dörnyei, 1998; Tulgar, 2018). In language learning, motivation basically is “the combination of effort plus desire to achieve the goal of learning the language plus favorable attitude toward learning the language” (Gardner, 1985. p. 10). During the language learning process, motivation (Dörnyei, 1998) is viewed as “the primary impetus to initiate learning the L2 and later the driving force to sustain the long and often tedious learning process” (p. 117).

Pintrich (1999) argued that learners’ motivational aspects drive learning outcomes and can determine success and failure in L2 learning. Thinking about L2 motivation from teachers’ perspectives, it deals with providing learners with a learning experience that boosted their intrinsic and extrinsic motivation. Thus, Keller and Deimann (2012) indicated that instructional designers today can employ various authoring tools effectively such as graphics, pictures, and videos in the designing process.

Motivation enhances learner’s efforts to achieve long and short-term goals. Although motivation is often associated with learners’ efforts to achieve personal goals, Keller and Burkman (1993) argued that facilitating and enhancing motivation is an instructional designer responsibility. Motivation based on this view can be applied through a systematic approach during the design phase. Keller (1999) addressed various aspects of motivation that can be utilized to enhance and maintain learner motivation. This idea of a systematic approach to motivational design led Keller (1987) to propose the (ARCS) model of motivation. The ARCS model of motivation consists of four elements including attention, relevance, confidence, and satisfaction.

The ARCS motivational model indicated that both instructional materials and the instructor should (a) intuit and maintain the learner’s attention, (b) emphasize the reason of why learners need to know the content, (c) have learners believe in their ability to succeed if they try, and (d)

promote learners' feelings of reward and pride (Keller, 1987). In L2 learning, Gardner and Lambert (1972) emphasized two concepts of motivation including integrative and instrumental motivation. In integrative motivation, the purpose of learning another language is to communicate with other language groups, cultures, and people. However, in instrumental motivation, the driving purpose of mastering another language is to gain values and benefits such as a new career, promotion, salary, position, college acceptance, etc. Furthermore, research also addressed two types of motivation: extrinsic and intrinsic. Here, extrinsic motivation deals with outside stimulated factors such as rewards and promotions while intrinsic motivation considers internal factors such as speaking L2 for playing sport as an enjoyable reason.

The ARCS Model in E-books

Utilizing ARCS in the e-book learning experience will allow learners to be introduced to certain elements to gain their attention. Thus, learners will be motivated to learn and focus during the process of learning. Various attention strategies addressed by Keller (2000) can be done at the beginning of target lessons as surprise events, such as ringing or buzzing sounds. The vibration of presented sounds is crucial to sustain learners focus and not lose their attention.

Relevance as the second category of ARCS model considers L2 learners' positive attitudes in engaging with learning experiences that meet their needs or personal goals. To address a relevant component, Keller (2000) advised the instructional designer to make connections between lessons and learners' personal goals such as academic success. In e-book learning, familiarity with idiomatic difficulties can be presented in form of a question that ask reader if they heard native Arabic speakers use this expression: ذر الرماد على العيون.

Another technique that can be used to enhance Arabic L2 positive attitudes is to describe what learners are able to do after learning idioms. For instance, after understanding the meaning

of this expression, ذر الرماد على العيون, reader can use it in real communication with native Arabic speakers.

Learners' confidence is the third category of ARCS model. It deals with increasing positive expectations in learners' ability of success (Keller, 2000). In the e-book chapter, learning expectations will be highlighted, such as, I expect you to comprehend the literal and figurative meaning of ذر الرماد في العيون (to *throw ash in the eyes*). It is crucial for learners to be confident in their ability to achieve target learning and not attribute that to luck.

The fourth category of ARCS model is satisfaction. It deals with learners being satisfied regarding their learning experience and outcome results. Thus, e-book idiom learning can promote learners' satisfaction through intrinsic aspects, such as grades on completing e-book reading chapters.

Summary

This chapter discussed the importance of the first idiomatic model that was presented specifically for the purpose of understanding of L2 idiomatic competence. The IDM model pays attention to the role of context and idioms in learners' first languages. Among various issues that can either delay or promote idiomatic competence, four crucial factors were found in idiomatic studies that affect L2 idiomatic processing including idiomatic context, transparency, cross-language overlap, familiarity, and frequency of idioms.

Four essential theoretical backgrounds help to guild the current study including the *Dual Coding Theory*, the *Constructivist Learning Theory*, the *Cognitive Theory of Multimedia*, the *Transactional Idiom Analysis*. These theories inform the research to utilize e-book technology to help learners rely on themselves to contract knowledge presented through visual representations and multimedia principles. In this chapter, several Arabic studies have utilized technology-based

tools to improve learners' skills, including writing, reading, listening, and speaking. Yet, there was no research found that utilizes technology with motivational design principles for the purpose of teaching and learning Arabic idiomatic expressions

CHAPTER 3: METHODOLOGY

Introduction

This chapter describes the methodology used in the current study, which examined the effects of an interactive e-book in promoting idiomatic competence and motivation among L2 learners of the Arabic language in Saudi Arabia. It explains the nature of the *explanatory descriptive design* and the process of answering the quantitative questions. I provide details about the method used to examine learners' motivational level in learning Arabic VP idioms through E-book. Moreover, I address research methods utilized to gain qualitative insight into learners' perspectives. Lastly, I cover the aspects of triangulation, validity, and ethical issues.

Overview

This study investigated the effects of using an interactive e-book in facilitating VP idiomatic competence among Arabic L2 learners in Saudi Arabia. To achieve this, I applied a pre/post-test to examine participants' comprehension and production of VP idioms. To explore learners' motivation, I employed the *Instructional Material Motivation Survey* (IMMS). The IMMS provided insight into the participants' motivational level after learning through either an interactive e-book or traditional paper-based learning. Finally, I explored the Arabic L2 learners' perspectives on learning VP idioms in an interactive e-book. Overall, the research questions addressed in this study were as follows:

1. What is the effect of using an interactive e-book on L2 learners' VP idiom competence in Arabic?
2. What is the effect of using an interactive e-book on L2 learners' motivation in Arabic regarding attention, relevance, confidence, and satisfaction?
3. How do L2 learners of Arabic studying in Saudi Arabia perceive the effectiveness of utilizing an interactive e-book on learning VP idioms?

Table 6

Overview of Methodology

	RQ	Data Type	Data collection persuader	Instrument	Analysis
1.	RQ1	Quantitative	Pre/posttest of idioms achievement test	VP Idioms achievement test	Mann-Whitney and Wilcoxon tests
2.	RQ2	Quantitative	Motivational survey	IMMS Materials Motivational Survey	Mann-Whitney and Wilcoxon tests
3.	RQ3	Qualitative	Express perception of using an interactive e-book to learn idioms	Simi-structure interview	Thematic analysis

Research Design

This study primarily aimed to determine the effects of an interactive e-book in promoting idiomatic competence and motivation among Arabic L2 learners in Saudi Arabia. The research design comprises a systematic plan that provided explicit details of research methods, procedures, and techniques taken to acquire the study's results (Glatthorn, 1998). A mixed-method (MM) approach was adopted for this study. The main assumption of utilizing the MM approach was that it helped understand research questions and problems better than a single method (Creswell, 2015). Quantitative data can provide specific numbers for the performance of Arabic L2 learners, which

can be statistically interpreted. However, adding a qualitative approach, such as open-ended interviews, provide in-depth information about the target sample size. This relevant information about participants' achievements, perspectives, learning strategies, and learning experiences may not be completely discovered by numbers alone. Thus, to qualitatively explore the idea of idioms' idiomatic competence, this study addressed learners' perspectives using technology and identified types of strategies that L2 learners of the Arabic language employed to comprehend and produce idiomatic expressions. By conducting another qualitative approach, "the additional collection of qualitative data helps to develop a more in-depth understanding of how experimental intervention actually worked" (Creswell, 2015, p. 535).

In this study, MM helped to "simultaneously collect both quantitative and qualitative data, merge the data, and use the result to understand a research problem" (Creswell, 2008, p. 557). The MM appeared in the research as a response to the idea of *triangulation* that provides information about the phenomena, problem, and research question from various resources. The triangulation of both quantitative and qualitative data occurred in the third question that explores L2 learning strategies and experiences during their interaction with an interactive e-book learning environment.

Utilizing the MM design approach helps researcher to gain insights into the phenomena of interest. Both qualitative and quantitative tools complement each other and help reduce the potential for getting less information during the analysis and interpretation phases. However, there are various types and forms for mixing qualitative and quantitative data (Creswell, 2014). For instance, there is an *explanatory sequential design*, where the researcher begins to collect quantitative data followed by qualitative data to complement the quantitative data results. Therefore, "the quantitative study needs to be prioritized, as its result will be better clarified and

detailed by second method’s results” (Piccioli, 2019, p. 430). Conversely, in the *exploratory sequential design*, researchers collect qualitative data first to explore and clarify quantitative data at the end. There are other types of MM designs, such as converging parallel and nested designs.

Two essential research aspects can affect the design type selected in MM research, which are the priority and the implementations of data collection (Creswell, 2003; Lopez-Fernandez & Molina-Azorin, 2011; Morgan, 1998; Morse, 1991; Onwuegbuzie & Leech, 2007; Tashakkori & Teddlie, 1998). Regarding priority, the MM approach prioritizes either quantitative or qualitative methods. The order and the timing in implementing the data collection can lead researchers to consider options, such as plural, concurrent, and simultaneous (Lopez-Fernandez & Molina-Azorin, 2011).

Table 7

MM Selected, Purpose, and Characteristics

Mixed Methods Design	The Goal of This Model	Model Characteristics
Explanatory sequential design	To explain and clarify the quantitative results	Sequential timing Unequal priority Connecting from the quantitative results to shape the quantitative data collection

In this study, an *explanatory sequential design* model was utilized. It is called explanatory because it begins with quantitative data that explain the findings using qualitative data (Creswell, 2014b). “Sequentially” refers to the initial process of collecting quantitative data and then collecting qualitative data (Creswell, 2014). Qualitative data in this study helped to find connections between Arabic L2 learners’ perspectives and learning strategies and the results of their attempts to comprehend and produce VP idioms. The explanatory sequential design was used to properly understand L2 learners’ comprehension production of VP idioms. In the qualitative

phase, I examined how L2 learners of the Arabic language perceive the use of interactive e-book technology in learning VP idioms and the types of strategies they applied. A semi-structured interview was used to obtain the needed qualitative data.

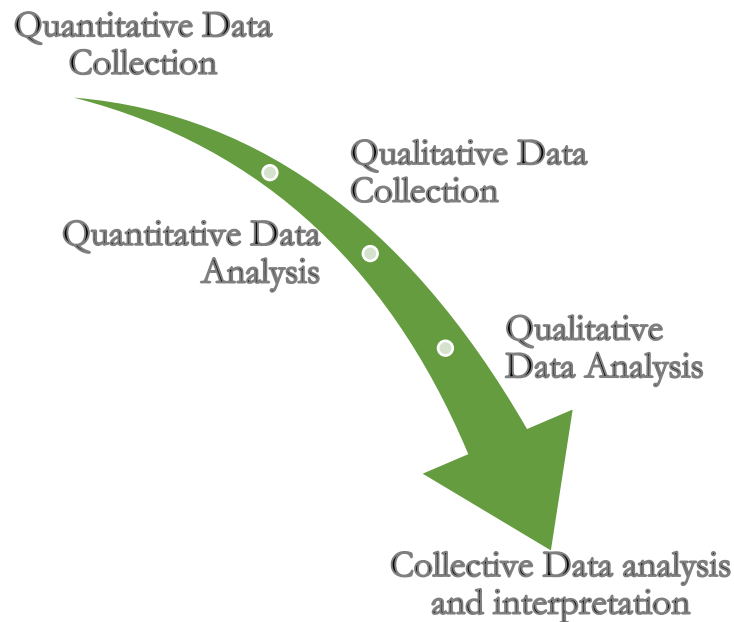


Figure 3

Current Study Research Steps in MM: Explanatory Sequential Design

Paradigm is a term defined initially by Kuhn (1970) as “a set of generalization, beliefs, and values of a community of specialists” (as cited in Creswell, 2014, p. 154). The pragmatism worldview of problems and phenomena is a leading paradigm in conducting the MM approach. Based on this paradigm, researchers collect various types of “quantitative and qualitative” data to develop a more complete understanding of the research problem (Creswell, 2014). The pragmatic paradigm is associated with the MM approach that frequently appeared in the research. Tashakkori and Teddlie (1998) recognized at least 13 researchers who addressed the pragmatic paradigm as

the most fitting paradigm in MM research. Also, the pragmatism and MM approaches are associated with the following aspects:

- Quantitative and quantitative methods can be employed in one study.
- The emphasis is on the research question because it is more important than the research philosophical worldview that highlighted the method used.
- The force to select between constructivism and post-positivism should be neglected.
- Utilizing metaphysical terms such as truth and reality should be avoided.
- MM research should be conducted through practical persuaders and philosophy that assist the methodological design. In pragmatism, researchers can apply deductive and inductive analyses as the result of mixing both quantitative and qualitative data (Creswell, 2014).

Context of Inquiry

This research was conducted in the Arabic Linguistic Institutions (ALI) at university levels in Saudi Arabia. The participants were male adult, non-native Arabic speakers. In Arabic institutions, learners engage in a two-year intensive Arabic language program that focuses on teaching Arabic for academic purposes. After completing the program requirements, students can enroll in a major of interest in any major. In the language program, learners are involved in various mandatory courses, such as reading, listening, Arabic culture, Islamic study, and speaking. The Arabic language courses have free tuition, and students receive a monthly salary and accommodation. Based on my experience working on the admission committee, students must have a high GPA, and their age should be from 18 to 25.

Study Participants

A total of 84 adult male L2 learners of the Arabic language in Saudi Arabia agreed to be part of this research. These participants come with various nationalities, first languages (L1), and background cultures, including countries such as South Korea, India, China, Russia, South Africa, Nigeria, France, Uzbekistan, Indonesia, the Philippines, and Spain. At the Arabic Linguistic Institution (ALI), the participants engage in intensive academic Arabic classes provided to three language levels, including beginners, intermediate, and advanced language levels. Students were placed in language levels based on their performance in the placement test. Students on this language program had to take the *Standardized Test of Arabic Proficiency in Speakers of Other Languages*. All Arabic L2 learners were required to take this placement test to move to the next level in their language program.

The selection of participants in advanced language classes was based on the literature suggestion, knowledge gap, and the L2 expected performance, where idiomatic learning is possible for intermediate up to advanced language classes. Learners in high-intermediate and advanced language classes are more likely to acquire the benefits of a multiword expressions class (Stengers et al., 2016). However, with low semantic transparency, idiom comprehension may become a problem for L2 learners who do not receive vocabulary support. To be recruited in this study, all participants must satisfy the following set of criteria: (a) Participants must be adult L2 learners of the Arabic language enrolling in advanced language class, and (b) Participants should not have been previously exposed to the Arabic VP idioms under investigation.

Two Advance language classes randomly assigned to learn idiomatic expression through either an interactive e-book environment or traditional paper-based learning. After completing the pre and post-test in the experimental process, seven participants were randomly selected to participate in a follow-up semi-structured interview. Due to Covid-19 and some restrictions in

Saudi Arabia language programs, the interview took place online via the ZOOM platform. This platform is free, and the participants' privacy was protected using private online meetings. I applied for the Institutional Board Review (IRB) and ALL program and got all approval needed to conduct this study (see Appendix E & F).

It is essential to note that various factors affect the process of selecting an accurate sample size in the quantitative portion of the study. Factors such as the needed power, the degree of alpha level, the effect size, test type, and several variables all play vital roles in the process of selecting an appropriate sample size (Pituch & Stevens, 1996). The sample size determined using *G-power* statistical software. By inserting specific values, including a power of 0.8, 0.5 effect size, and the group size ratio of 1:1. A total of 84 learners were recruited for this study.

The Treatment: The Interactive E-book

I used a web-based interactive e-book learning software that is based on the HXML5 format created by a team of software developers, and this platform is a flexible to add features such as embedding multimedia elements and adding the collaborative learning aspect. This web-based software called IMapBook has its own server storage, which facilitates accessible data collocation (Alsofyani, 2019). In this study, for the purpose of learning VP Arabic idioms, an interactive e-book learning system presented as multimedia web-based software was used. This is a free web-based learning website, and L2 learners can access it through multiple browsers such Google and Firefox. This platform was designed for various learning purposes under the name IMapBook. I obtained the owner's (Dr. Glen Smith) permission to utilize this software to conduct research about Arabic idiom learning in Saudi Arabia. According to Smith (2013), the IMapBook software can display in participants' own devices or any centralized server, and it show flexibility that the

author's desire to create content. Also, the interactive e-book is not limited to its reading function only; its functionality can serve several applications, such as the following:

- Editing text and graphics
- Displaying content
- Applying animation
- Accessing web browsers
- Web browsers
- Store the Data
- Add visual representation
- Create Learning Activities



Figure 4

VP Arabic Idioms in the E-book Under the Title General News

I created an electronic one chapter in the interactive that has 10 VP idioms in short authentic articles. The rationale for creating this chapter was to examine if the interactive e-book can offer the opportunity to boost VP idiomatic competence and motivation. Providing such a learning environment may potentially support a traditional classroom environment. In this chapter, the

participants will interact with various topics from Arabic newspapers. Learners can click on the “Next” icon to move to the next page.

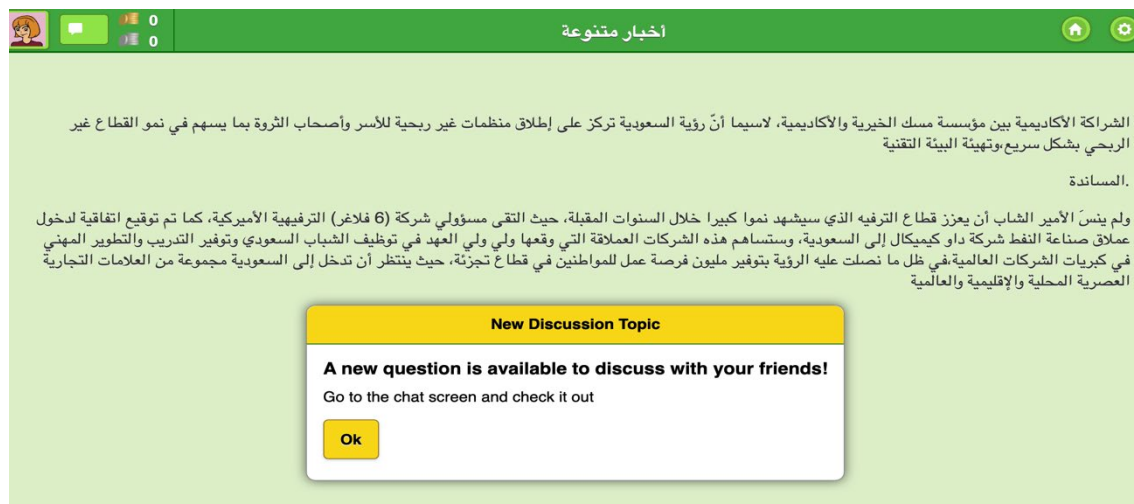


Figure 5

An Example of Discussion Question Provided About the Target VP Idioms

In the design phase, the researcher focused on addressing the attention, relevance, confidence, and satisfaction (ARCS) model to enhance learners' motivation. Various strategies applied based on the ARCS model, such as sounds to capture learner's attention, describing what Arabic learners can do after mastering the target VP idioms to make connections between personal goal and learning experience, addressing the learning expectation to enhance learners' confidence about their ability to learn, and the satisfaction element in terms of chapter completion grades presented. The rationale for addressing the ARCS model in e-book design was to examine the effectiveness of this technology in promoting the L2 motivational level to learn the target VP idioms.



Figure 6

An Example of VP idiom picture in the E-Book



Figure 7

An Example of VP idiom picture in the E-Book

Learning Materials in E-book

The VP idiom context in the interactive e-book learning environment was based on authentic Arabic language newspapers. Authentic materials in this study refers to the language used by native Arabic speakers that are not modified for the purposes of L2 learning and teaching, such as e-newspapers, TV reports, social media content, and magazines.

The rationale for selecting authentic materials was to provide Arabic (L2) learners with the actual use of VP idioms in real-life situations. Authenticity in teaching a second language is a crucial issue. Researchers argued that language modified for teaching L2 learners is ineffective, because it does not show authentic exposure to the language used in real-life situations. The traditional method of teaching a second language promotes the idea of modifying language to enhance L2 language acquisition. Research has suggested utilizing authentic contexts in L2 settings (Liontas, 1999).

In the interactive Arabic e-book, I selected authentic topics that contained VP idioms produced in authentic Arabic newspapers. The authentic materials were extracted from authentic resources, namely the official online newspaper in Saudi Arabia, *Al-Riyadh*.

I uploaded newspaper articles in the interactive e-book software to create one chapter under the title General News. In this chapter, the participants in the experimental group engaged in ten short articles that contain ten VP idioms highlighted in the text. However, the participants in the control groups received the same authentic newspaper materials in paper-based learning, where the same ten short articles with VP idioms were given to the control group as well.

Before the experiment, two instructors conducted a small tutorial session to show the instructor in the experimental group how to navigate through the interactive e-book. I demonstrated the software access by moving from one section to another and logging out. The rationale for doing this tutorial was to ensure that the instructor could train participants on how to access the learning materials and how best avoid potential technical issues likely to distract participants' learning.

The VP idiom selection must match the VP idiom descriptions. According to Liontas (2002b), the characteristics of VP idioms are as follows:

- It is not monomorphemic or polymorphemic expressions, such as a pad, to rely on.
- It does not readily correlate with a given grammatical part of speech.
- It is not decomposable and cannot be understood by analyzing familiar meanings of its separate words.
- It is easily visualized in the mind of the learner by evoking a powerful mental image.
- It is a conventionalized complex multilexemic phrasal expression occurring above word level.
- It is polysemous and has both a common literal and referential meaning.

Table 8

Examples of VP Idioms

VP Arabic idioms	Literal meaning	Figurative meaning
عاد بخفي حنين	He backed with the slippers of Hunain	He returned empty-handed
تجري الرياح بما لا تشتهي السفن	Winds go against what ships desire	You cannot always have what you want
ذر الرماد على العيون	Put ash in the eyes	Deceitful opinion, act, action, and proposition
يطرق الحديد وهو ساخن	Hit while the iron is hot	To go for the chance immediately
يخرج من عنق الزجاجة	To pass through the bottleneck	To pass a situation with a lot of effort and difficulty

The VP idiom selection came from the Arabic idiom dictionary, *التعبيرات الاصطلاحية معجم*, the Contextual Dictionary of Idiomatic Expressions created by Siinii et al. (1996). This dictionary contains more than 2,000 idiomatic Arabic expressions. Idiomatic expressions in this dictionary were collected from a wide range of old and modern Arabic literature texts. However, I checked the existence of the selected VP idioms in native Arabic discourses in recent academic studies that utilize Arabic idioms, such as in corpus-based and second language acquisition research.

Specifically, I selected ten VP idioms that existed in the Contextual Dictionary of Idiomatic Expression and those mentioned in some studies (Awwad, 1990; Daoud et al., 2016; Nasir et al., 2018) (see Appendix A).

Procedures

The participants in this study were L2 learners of the Arabic language at the advanced language level in Saudi Arabia. I randomly selected two classes from the advanced language level to learn VP idioms through interactive e-book or paper-based learning (experimental vs. control). Both classes participated in learning VP idioms in (one session, 120 minutes long). The experimental class learned VP idioms through an interactive e-book, and the control class learned to use regular paper-based learning. The researcher explained the purpose of the study and train the participants in the experimental group on how to access idiom material in the e-book. To measure learners' idiomatic competence in e-book and paper-based learning, I employed a pre/post-test control group design. In this design, "a pre-test provides a measure on some attribute or characteristic that you assess for the participants in the experimental group before receiving treatment" (Cross, 2015, p. 297). The pre-test and post-test helped to provide insights into participants' learning competence using e-book and paper-based learning—specifically L2 comprehension and production of the Arabic VP idioms. The pre-test and post-test indicated if there any statistically significant between two class. Both classes received the IMMS Survey to determine the difference between classes in motivational level. The following section described quantitative and qualitative instruments.

Quantitative Instruments

Background Information and Language Experience Survey

To provide a better understanding of the participants' background and Arabic L2 language experience, the participants were asked to complete an online survey design in Qualtrics to collect demographic information about L2 Arabic learners in Saudi Arabia. This survey provided information about participants' experiences in learning Arabic. I also considered the validity of the background informational survey. Therefore, this survey sent to professional Arabic language teachers who are subject-matter experts from ALI in Saudi Arabia and experts in teaching Arabic as a second language in different countries, such as the USA and Jordan. This survey comprises several questions that cover different aspects of learners' background knowledge in Arabic idioms and their language proficiency, such as age, fluency in Arabic, ability to understand Arabic idioms, and confidence in producing Arabic VP idioms.

Pre-test and Post-test Idiomatic Competence Tests

To measure the learners' idiomatic competence comprehension and production in both groups, I designed idiomatic competence as a pre-test and post-test. This test is comprised of 20 items as multiple-choice questions and 10 items as fill-in-the-blank (see Appendix B). These types of questions were mentioned in L2 idiom studies published and conducted by Liontas in the last two decades (Liontas, 1999, 2001, 2002, 2015b, 2018a, 2018b, 2018c). Two Arabic instructors were observed both groups and collected the total scores.

Instructional Material Motivation Survey (IMMS)

The participants in the experimental group received an online survey questionnaire related to the IMMS designed by Keller (2010). The IMMS content was based on the original work of

Keller (1987a, 1987b) regarding the ARCS instructional design approach. This IMMS indicated to what extent participants found the content and materials in the interactive e-book motivating in the four areas related to their attention, relevance, confidence, and satisfaction. I utilized the Mann-Whitney U test to determine if there was a significant difference among participants regarding their motivational level related to the ARCS components.

To ensure the reliability and validity of the IMMS, Keller (2010) highlighted research that administered the IMMS to 90 participants enrolling in the US Southern University. Based on Cronbach's alpha statistical measure, the internal constancy of the IMMS was satisfactory. The overall scale of IMMS reliability estimated based on Cronbach's alpha was 0.91.

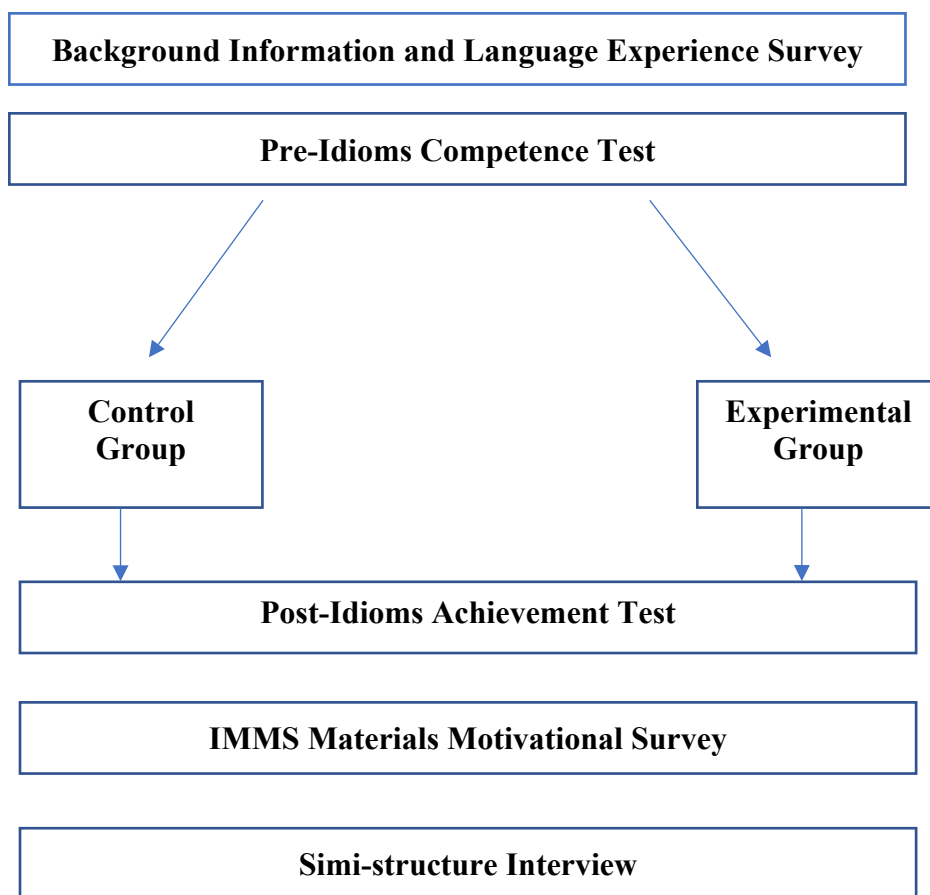


Figure 8

Study Procedure in the Quantitative Phase

Data Analysis Procedure

To determine if there was a significant difference between two independent variables (experimental vs. control), I used an independent sample t-test. The analysis of this t-test based on an alpha level of 0.05 using SPSS 9.4. The researcher reported the descriptive statistics, including the groups' means, standard deviation, and median. The effects size explored the effects of interactive e-book in promoting Arabic learners' idiomatic competence. All participants were adult males. I also checked the data normality because plausible outliers can affect the overall t-test results (Field, 2013).

Further, I examined the effects of independent variables on participants' motivational levels during their interaction with e-books. To achieve this, I used the IMMS, which contained 36 items based on a Likert 5-point scale. Participants were asked to respond on the four categories related to the Keller ARCS model (attention, relevance, confidence, and satisfaction). Because data from the IMMS were gathered following the completion of the treatment, I also reported the available descriptive statistics, including mean, median, standard deviation, and the range of the Likert scale survey.

Part 2: Qualitative Research Design

This study followed the MM design approach. I employed an explanatory sequential design to examine the effectiveness of using interactive e-book for learning Arabic VP idioms. In the qualitative phase, I aimed to gain deeper insight into participants' perspectives of using interactive e-book in learning VP idioms and the type of strategies that they used to understand idioms' meaning. Participants' perspectives complemented the quantitative results to achieve a better

understanding of learners' overall learning. Thus, more information can be obtained related to various factors that may not be covered in the quantitative phase.

Semi-Structured Interview

In the follow-up interview, I randomly selected participants from the experimental group to volunteer for the interview. I had seven participants who engaged individually in a semi-structured interview protocol to explore their perspectives about interactive e-book learning environments. Although the experimental group was conducted using the Arabic language as the target language, the participants had the option to use either Arabic or English, and any other language they were proficient in during the interview. If a participant preferred to answer in Arabic, the translation accuracy of the interview was checked through a certified professional translator.

I asked several open-ended questions to explore in-depth the participants' perspectives (see Appendix D). I recorded, transcribed, and checked the translation of the data with translators who were certified experts in Saudi Arabia.

Data Collection Procedure

All participants were informed about the objectives of this study. This included understanding that their personal information was to be protected at all times when answering questions. Each participant was interviewed individually at their convenience and preferred time slot. Participants were also encouraged to express their feelings, opinions, difficulties, advantages, disadvantages, and types of strategies in learning VP idioms through the interactive e-book. Because of the COVID-19 situation in Saudi Arabia during the time of this study, the interview took place on the online platform ZOOM.

Data Analysis

To gain a deep understanding of students' experiences in using an interactive e-book, I utilized an explanatory sequential design approach. This approach helped to explain Arabic learners' experiences and strategies used to decode the figurative meaning of idioms. There are three important types of case studies: exploratory, explanatory, and descriptive. However, an exploratory case study has the benefits of explaining and describing a phenomenon (Creswell, 2014). The rationale for selecting an explanatory case study approach was to explain and support the findings from the qualitative results, which benefits the researcher in grasping a better understanding of quantitative and qualitative data.

I applied the constant comparative method to analyze the data gathered from the qualitative question. A thematic analysis was performed to address and analyze themes based on participants' interviews. According to Braun and Clark (2006), "thematic analysis is a method for identifying, analyzing, and reporting patterns (themes) within the data. It minimally organizes and describes your data set richly" (p. 79). Three stages in analyzing the qualitative data were applied, including open, axial, and selective coding. In the first stage, I applied open coding to break down the meaning of words, phrases, and sentences in the transcribed interview. I used thematic coding to categorize large themes related to quotes, phrases, words, and paragraphs. In the second stage, axial coding was applied to search for the common themes by revisiting the data again to make connections between codes. In the last stage, selective coding was conducted to select the major categories and link them to the research question.

MM Synthesis

I utilized an *Explanatory Sequential Design* (Explanative Design). The first phase of this approach began by collecting and analyzing the quantitative data, followed by the collection of

qualitative data, which are utilized to explain the quantitative findings. In the explanatory design, I connected both phases, quantitative and qualitative, while also recruiting participants for the qualitative follow-up analysis that was grounded in the quantitative results (Creswell et al., 2003). After completing the two phases, I integrated both sets of data. I then discussed the results extensively by grouping the findings from both phases under the factors affecting L2 learners' idiom competence and experience. By combining both quantitative and qualitative data findings, I was able to gain insight into the effectiveness of the interactive e-book that sought to promote idiomatic competence among Arabic L2 learners.

Validity

The research validity considers two aspects: accurate interpretation of data and generalizability. These two aspects are often divided into internal and external validity. In internal validity, the researcher must ensure that extraneous variables are controlled. In this study, two classes in the advanced language level enrolled as experimental or control groups. Both groups came from the sample population (advance language proficiency). Both groups were comprised of adult males in an advanced-level class.

I was aware that external validity may become a threat to the experimental results. Because various types of external validity are related to incorrect interpretations of data, including interactions in the setting and issues of past and future circumstances of the experiment, I conducted the following three procedures: (1) I identified the external validity, (2) I provided information about specific threats, and (3) I had a plan to explain these external threats in the experimental design (Creswell, 2014). Table 4 shows the anticipated external validity type that may well impact the results of this study.

Table 9

External Validity That May Appear in the Current Study

Type of External Validity	Description	What Researcher Did
Participants' prior knowledge of VP idioms	Some participants may have previous knowledge of VP idioms, which could affect the overall results	Background informational survey helped to identify participants with VP idiom experience
Participants' interaction in the experimental phase	Due to the nature of the experiment, the interactions between participants could affect the generalizability of the findings	Instructors in the site helped to avoid interactions. A video recording of the learning session helped to identify any interactions
History of the treatment	Participants may become knowledgeable of VP idioms due to spending a long time in the experiment	The participants learned through one session only

Ethical Considerations

I ensured that the participants understand the purpose of this study, and I obtained their permission to participate and share data for learning purposes only. The Arabic L2 learners then signed the informed consent forms. In addition, participants knew that they were free to leave the experiment any time. Although I was not teaching courses in the program, being a faculty member in the ALI was an important factor to address. Students may feel either forced to participate or become angered about having to do so. I therefore recruited two instructors to manage the instruction of the experimental and control group, respectively. Participants were informed that participating in this study had no immediate consequences, rewards, or obligations.

Summary

This chapter described the methodology that was applied in this study. I adopted an MM research design to explore the effectiveness of using the interactive e-book environment in promoting idiomatic competence and motivation among Arabic L2 learners in Saudi Arabia. In the quantitative phase, I described the instruments employed to collect the quantitative data, including the background information and language experience survey, pre-test, and post-test idiomatic achievement tests, and IMMS survey. In the qualitative phase, I conducted an explanatory descriptive case study to address learners' perceptions of using an interactive e-book to learn VP idioms. By the end, I explained the triangulation approach that can provide quantitative and qualitative evidence of the effects of using an interactive e-book to learn Arabic VP idioms

CHAPTER FOUR: RESULT AND DISCUSSIONS

Overview

In this chapter, I report the results of the current study that examines the effects of using an interactive e-book on Arabic L2 learners' vivid phrasal (VP) idiom competence and motivation. Moreover, I address participants' experiences of using e-books in learning Arabic VP idioms in Saudi Arabia. To analyze the data, I utilize the Statistical Package for the Social Sciences (IBM-SPSS®) (version 25.0). I provide details about results of the demographic information survey, pre-test and posttest, Instructional Materials Motivation Survey IMMS, and Semi-structured interview.

Assumption tests prior to a parametric analysis (independent samples t-test) were conducted using Kolmogorov-Smirnov and Shapiro-Wilk tests. Due to the violation of the normality assumption of the data set, a non-parametric analysis (Mann-Whitney U test) was employed in this study. The Mann-Whitney U test is a non-parametric test that overcomes distributional issues by ranking the data and helps eliminate the effect of outliers (Field, 2013).

This study sought to answer three research questions:

1. What are the effect of using an interactive e-book on L2 learners' VP idiom competence in Arabic?
2. What are the effect of using an interactive e-book on Arabic L2 learners' motivation in Arabic regarding attention, relevance, confidence, and satisfaction?
3. How do L2 learners of Arabic studying in Saudi Arabia perceive the effectiveness of utilizing an interactive e-book on learning VP idioms?

I conducted an explanatory sequential design model that utilizes quantitative and qualitative data to explain findings. The first question provided quantitative data by using pre-and post-tests. This question investigated the idiomatic competence of the participants who learned through either an interactive e-book or traditional paper-based learning. Furthermore, the second question reported the findings of the Instructional Materials Motivational Survey (IMMS), which measures participants' motivational levels in four components: attention, relevance, confidence, and satisfaction. Lastly, the third question provided qualitative evidence of the participants' perspectives on using an interactive e-book to learn Arabic idiomatic expressions. For the first and second questions, I utilized Mann-Whitney U test because the data set did not meet the normal distribution assumption required to conduct parametric analysis.

Table 10

Research Focus in this Study

Research Focus	Participants	Number of Participants	Data Source	Analysis Procedures	Expected Findings
Idiomatic competence	Control (traditional paper-based learning) and experimental group (e-book learning)	84	Pre/Post-test	Mann-Whitney U	E-book enhanced idiomatic competence
Learners' motivation	Control (traditional paper-based learning) and experimental group (e-book learning)	84	IMMS survey	Mann-Whitney U	E-book enhanced learners' motivation
Learners' perspectives	Experimental group (e-book learning)	7	Semi-structured interview	Thematic analysis	E-book had positive impact on students learning

The research focus, encompassing the study groups, participant count, data source, analysis procedures, and anticipated results, are presented in Table 10. The first and second questions highlighted idiomatic competence and learners' motivation after learning using an interactive e-book (experimental group) and traditional paper-based learning (control group). The third question showed the learners' preceptive of using an interactive e-book to learn idiomatic expressions. The participants in this study were all learners of Arabic at the Arabic Linguistic Institution at King Saud University in Saudi Arabia.

Demographic Information

Prior to conducting the experiment, a total of 84 participants received a background information survey. The main purpose of this survey was to collect more information about the participants' first language, years of experience in learning Arabic, age, self-rating of Arabic language competence, idiomatic competence, and Arabic idiom use in their daily conversations among native speakers.

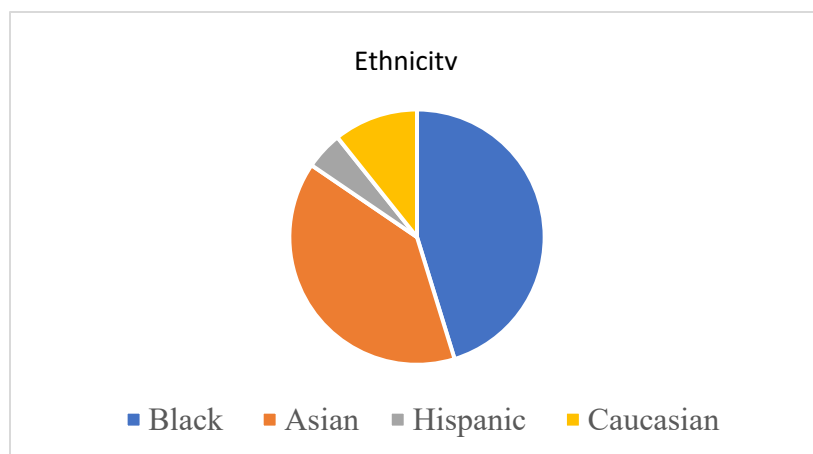


Figure 9

The Participants' Ethnicity

To begin with, all participants were male between the ages of 20 and 26. The data showed various ethnicities among the participants, including 45% Black African, 39% Asian, 11% Caucasian, and 5% Hispanic.

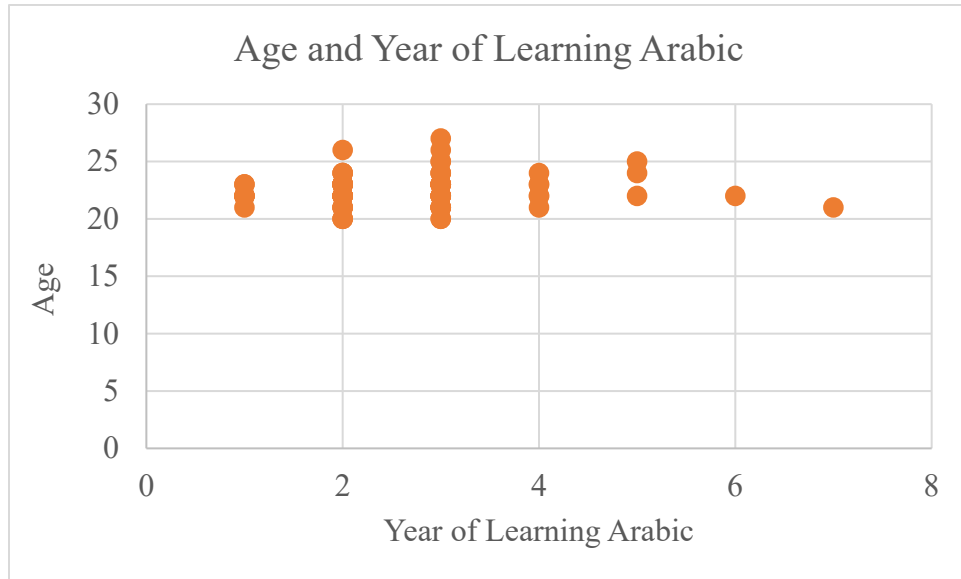


Figure 10

Age of the Participants and Year of Learning Arabic

As shown in Figure 7, participants had experience learning Arabic prior to enrolling in the current study. The majority of respondents reported that they spent at least two to three years learning Arabic as a second language. Only six participants reported that they had more than five years of experience learning Arabic. The participants also indicated a variety of first-language backgrounds.



Figure 11

The Participants' First Languages

All participants had different first languages, including Urdu, English, Swahili, Somali, Tagalog, Russian, Nepali, Mandinka, France, Himyarite, Mori, Chichi, Wolof, Flue, and Kinyarwanda languages. Overall, most of the participants indicated that Arabic was considered their second language. Only six participants highlighted that Arabic was their third language. All participants highlighted that they faced idiomatic expressions more than three times in daily communications with native Arabic speakers. However, 70% of the participants indicated that they encountered idiomatic expressions more than five times in their daily interactions.

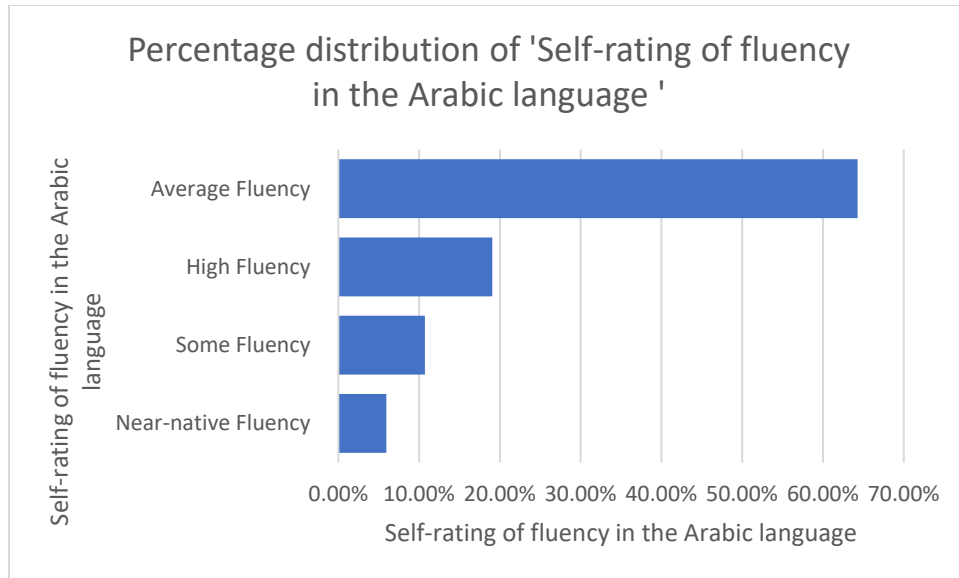


Figure 12

Self-rating Fluency in the Arabic Language

In learning Arabic as a second language, most participants indicated that they had been learning the language for more than two years. In Figure 9, the question about language proficiency showed participants self-rating themselves at the average fluency level. More specifically, 64.29% of the participants said they have average language fluency in speaking Arabic. However, only 19.05% of the participants rated their language proficiency at a high level of fluency. Less than 6% of the participants indicated their language proficiency in speaking Arabic as near-native fluency. Additionally, 65% of participants showed average fluency in idiomatic competence. Only 20% of the participants indicated having high fluency in idiomatic competence. Through this survey, 97% of the participants indicated the importance of learning Arabic idiomatic expressions.

The Study Questions

First question: What is the effect of using an interactive e-book on Arabic L2 learners' VP idiom competence?

To determine the effect of using an interactive e-book on Arabic L2 learners' VP idiom competence, the Mann-Whitney U test and Wilcoxon signed rank test were used, as shown below:

Assumption of Normality

One important assumption for conducting independent samples t-test is the normality of data distribution. In this study, Kolmogorov-Smirnov and Shapiro-Wilk tests were performed to check data normality, as shown below:

Table 11

Normality Distribution for Idioms Competence Tests

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
TOTAL	0.08	168	0.006	0.99	168	0.01

Table 11 reveals that the data of the idiom's achievement test are not normally distributed ($p < 0.05$). The researcher utilized the Mann-Whitney U test instead of the independent sample t-test because the data did not have an acceptable degree of normality distribution.

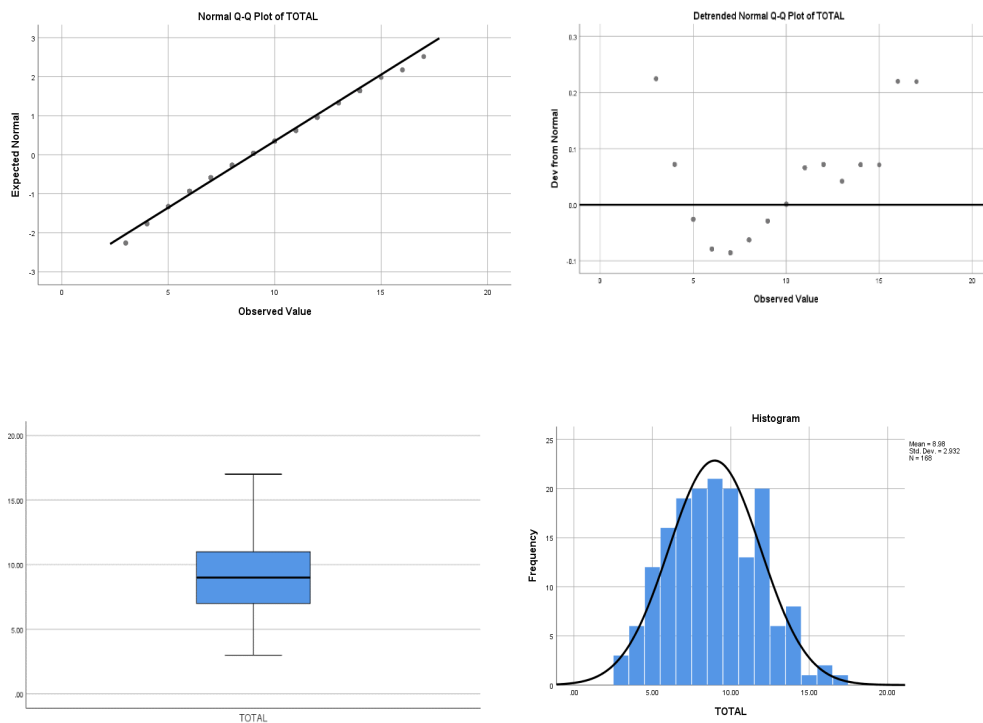


Figure 13

Normal q-q plot and Histogram of VP Idioms test

Assumption of the Independence of Observations

During the idiomatic competence pre-and post-test, an instructor observed all processes, and indicated that participants had no interaction with each other in each group. Individual participant scores did not affect other participants' scores. Therefore, the assumption of independence was held.

First question: What is the effect of using an interactive e-book on L2 learners' idiomatic competence?

To answer this question, the researcher utilized a series of Mann-Whitney and Wilcoxon tests for idiomatic competence scores of both experimental and control groups.

Pre-control and Pre-experimental Data

Prior conducting the experiment, pre-test was conducted to examine the difference between the experimental group and control group through idiomatic competence test. Table 12 presents the Mann-Whitney test that utilized to identify if there is a statistical difference in mean between the experimental group (using E-book) and control group (using paper-based).

Table 12

Mann-Whitney U Test for Pre-control and Pre-experimental Data

Group	N	Mean Score	Sum of Scores	Mann-Whitney U	Wilcoxon W	Z	P value
Pre-control	42	40.54	1702.50	799.50	1702.5	0.74	0.46
Pre-experimental	42	44.46	1867.50				

Table 13

Descriptive Statistics for Pre-control and Pre-experimental Data

Group	N	Mean	SD	Minimum	Maximum	Median
Pre-control	42	7.05	2.22	3	13	7
Pre-experimental	42	7.62	2.69	4	14	7

Table 12 shows that there were no statistically significant differences between the mean score of the two groups, experimental, and control, in the pre-test of VP idioms competence, and the value of significance level was (0.46), which is greater than (0.05) alpha level. The average number of the control group (pre-test) ($M = 7.05$, $Mdn = 7.0$) was close to the average number of experimental group (pre-test) ($M = 7.62$, $Mdn = 7.0$), $U = 799.50$, $z = 0.74$, $p > 0.05$. The analysis

findings indicate that the level of prior knowledge in idiom competence between experimental and control group was equivalent; thus, the prior knowledge difference was not considered when comparing the posttest scores between the two groups.

Post-control and Post-experimental Data

To examine the effects of interactive E-book on promoting idiomatic competence, a post-test was conducted to measure the mean difference between the post-test results of the experimental and control group. Table 14 provides the result Mann-Whitney results of idiomatic competence test.

Table 14

Mann-Whitney U Test for Post-control and Post-experimental Data

Group	N	Mean Score	Sum of Rank	Mann-Whitney U	Wilcoxon W	Z	P value	R
Post-control	42	37.13	1559.50	656.50	1559.50	-2.04	0.042*	0.31
Post-experimental	42	47.87	2010.50					

* The value is significant at the level of 0.05

Table 15

Descriptive Statistics for Post-control and post-experimental Data

Group	N	Mean	SD	Minimum	Maximum	Median
Post-control	42	10.0	2.12	6	14	10.0
Post-experimental	42	11.24	2.61	7	17	11.0

In Table 14, the Mann-Whitney result shows that there is a statistically significant difference at the alpha level (0.05) between the mean scores of the experimental and control groups in the post-test of VP idioms competence, in favor of the experimental group ($M = 11.24$) compared to the control group ($M = 10.00$). The previous results indicate that there is a favorable effect of using an interactive e-book on L2 learners' VP idiom competence. As shown in Table 14,

the value of (r) concerning the results of the differences between the mean of the experimental and control groups in the post-test of VP idioms competence was at ($r = 0.31$) which indicates a medium effect size. The average number of the control group (post-test) ($M = 10.0$, $Mdn = 10.0$) was significantly less than the average number of the experimental group (post-test) ($M = 11.24$, $Mdn = 11$, $U = 656.50$, $z = -2.04$, $p < 0.05$), and the effect size was ($r = 0.31$). These descriptive statistics showed significance between control and experimental groups in favor of the experimental group. This finding shows that using an interactive E-book was statistically significant to promote idiomatic competence in the experimental group.

Pre-experimental and Post-experimental Data

To measure the effects the interactive E-book on promoting idiomatic competence within the experimental group, the Wilcoxon test was conducted to measure the difference between pre-test and post-test. Table 16 illustrates the mean score, sum of rank, and P value. Table 17 provides descriptive statistics of the experimental group in the pre-test and post-test.

Table 16

Wilcoxon Test for the Pre-experimental and Post-experimental Data

	N	Mean Score	Sum of Rank	Z	P. VALUE	R
Negative Scores	6	10.42	62.50	-4.58	0.01	0.71
Positive Scores	33	21.74	717.50			
Ties	3					
Total	42					

** The value is significant at level of (0.01)

Table 17

Descriptive Statistics for the Pre-experimental and Post-experimental Data

Group	N	Mean	SD	Minimum	Maximum	Median
Pre-experimental	42	7.62	2.61	4	14	7
Post-experimental	42	11.24	2.93	7	17	11

Table 16 shows that there were statistically significant differences at the 0.01 alpha level between the mean scores of experimental groups in the pre-and post-tests of VP idioms competence, in favor of the post-test with a mean score of $M = 21.74$ compared to $M = 10.42$ for the control group. The previous result indicates that the experimental group achieved a high score after learning VP idioms via an interactive e-book. The effect size was ($r = 0.71$) which indicated a large effect size. The average number of experimental group (pre-test) ($M = 7.62$, $Mdn = 7$) was significantly less than the average number of experimental group (post-test) ($M = 11.24$, $Mdn = 11$, $z = -4.58$, $p < 0.05$) and effect size of ($r = 0.71$). These descriptive statistics indicate a large difference in the sum of scores in the pre-and post-tests of the experimental group.

Second question: What is the effect of using an interactive e-book on L2 learners' motivation in terms of attention, relevance, confidence, and satisfaction?

To select an accurate parametric statistical test for the data from the IMMS, the assumption of normality was checked to ensure inadequate inferences and interpretation of the findings. Therefore, a test of the normality of data was conducted using Kolmogorov-Smirnov and Shapiro-Wilk tests, as shown below:

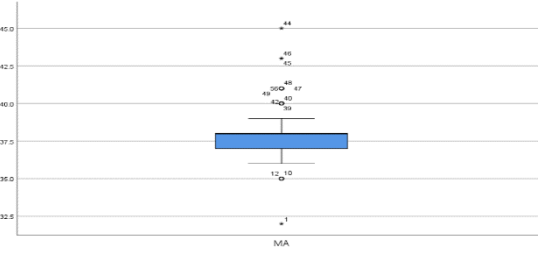
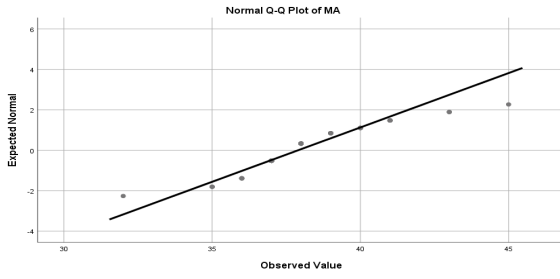
Table 18

Normality Distribution for All Motivation Subcategories

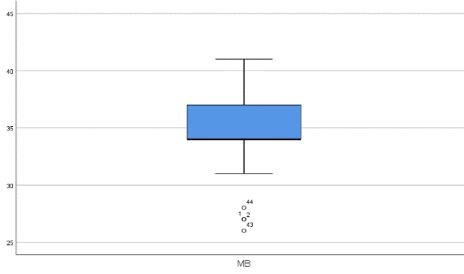
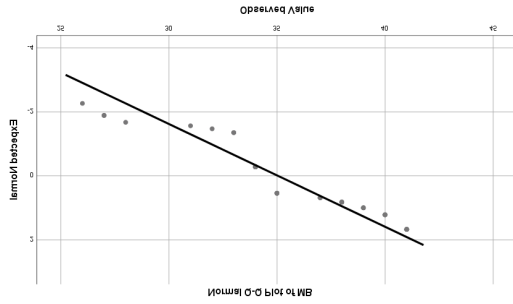
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Attention	.253	84	.00	.87	84	.00
Relevance	.310	84	.00	.80	84	.00
Confidence	.336	84	.00	.77	84	.00
Satisfaction	.378	84	.00	.70	84	.00
Total	.265	84	.00	.80	84	.00

Table 18 shows that the data of the motivational survey in all four components did not have normality distribution. The value of significance level for dimensions and total score was 0.01 for both Kolmogorov-Smirnov and Shapiro-Wilk tests ($p < 0.05$). The researcher used the Mann-Whitney U test instead of an independent sample t-test because the data did not have an acceptable degree of normality distribution. In this data analysis, the outliers were not removed. Instead, the non-parametric test, Mann-Whitney U, was used to mitigate the effects of outliers on the results. The rationale for this decision is that the mean score rank and median of the score were found to be more robust to the outliers when using the Mann-Whitney U test. However, it is important to note that outliers still existed in the data.

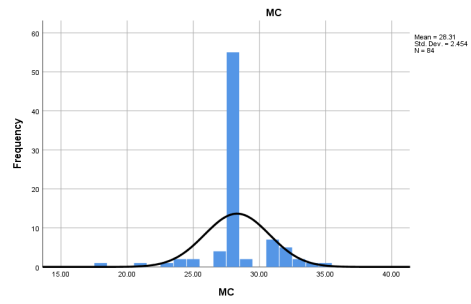
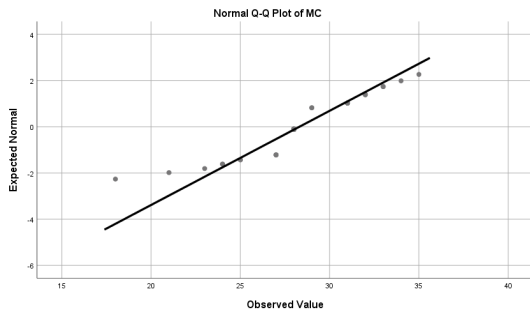
Attention



Relevance



Confidence



Satisfaction

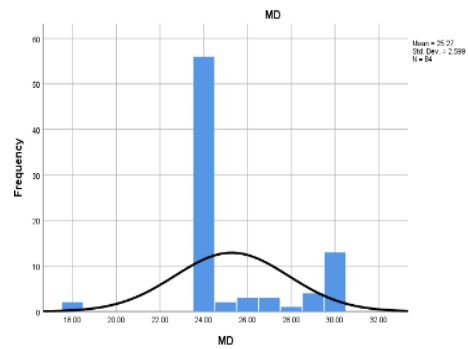
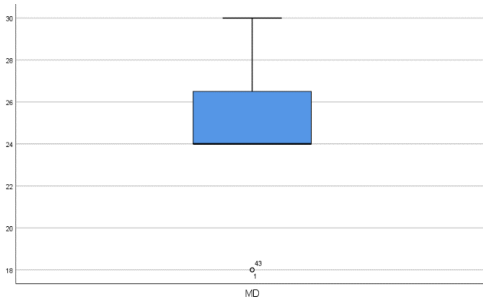


Figure 14

Normal q-q plot and Box Plot of All Motivational Aspects

Assumption of the Independence of Observations

During the motivational survey, an instructor observed all processes, and indicated that participants had no interaction with each other in each group. Individual participant scores did not affect other participants' scores. Therefore, the assumption of independence was held.

Attention

All participants completed the IMMS survey after learning Arabic VP idioms through an interactive E-book and traditional paper-based learning. The first component of the IMMS survey was related to the attention of learners. More specifically, the survey explored the effect of used material on learners' attention. Table 10 shows the Mann-Whitney U test result for the experimental groups (using E-book) and control group (using paper-based) in terms of attention.

Table 19

Mann-Whitney U Test for Learners' Motivation in Terms of Attention

Group	N	Mean Rank	Sum of Rank	Mann-Whitney U	Wilcoxon W	Z	P value
Control	42	44.62	1874.00	793.00	1696.00	-0.83	0.40
Experimental	42	40.38	1696.00				

Table 20

Descriptive statistics for Learners' Motivation in Terms of Attention

Group	N	Mean	SD	Minimum	Maximum	Median
Control	42	37.70	1.73	32.00	41.00	38.00
Experimental	42	38.07	1.99	37.00	45.00	37.00

The Mann-Whitney result shows that there were no statistically significant differences between the experimental group ($M= 38.07$, $W_s= 1696.00$, $z = -0.83$, $p=.40$) and the control group ($M=37.7$, $W_s= 1696.00$ $z = -0.83$, $p=.40$) in terms of attention. In the value of significance level was ($p = .407$) which is greater than (0.05) alpha level. The descriptive statistics in Table 20 shows that the mean score of the control group ($M = 37.70$, $Mdn = 38.00$). In contrast, the experimental group shows close score ($M = 38.07$, $Mdn = 37.00$, $z = -0.83$, $p > 0.05$). The analysis findings indicated that the effect of an interactive e-book was not statistically significant to promote learners' attention.

Relevance

Table 21

Mann-Whitney U Test for L2 learners' Motivation in Terms of Relevance

Group	N	Mean Rank	Sum of Rank	Wilcoxon W	Z	Mann-Whitney U	P value
Control	42	40.54	1702.50	1702.50	-0.82	0.82	0.40
Experimental	42	44.46	1867.50				

Table 22

Descriptive Statistics for Learners' Motivation in Terms of Relevance

Groups	N	Mean	SD	Minimum	Maximum	Median
Control	42	34.90	2.98	27.00	41.00	34.00
Experimental	42	35.19	3.27	26.00	41.00	34.00

Table 21 shows that there were no statistically significant differences between the experimental group ($M= 35.19$, $W_s= 1702.50$, $z = -0.82$) and the control group ($M= 34.90$, $W_s=$

1702.50, $z = -0.83$) in using an interactive e-book on L2 learners' motivation in terms of relevance; the value of significance level was (.40) which is greater than (0.05) alpha level which is not statistically significant. In Table 22, the descriptive statistics shows that the mean rank of the control group ($M = 34.90$, $Mdn = 40.45$) was close to that of the experimental group ($M = 35.19$, $Mdn = 34.0$), $z = -0.82$, $p > 0.05$. The analysis findings indicated that the effect of an interactive e-book was not statistically significant to promote learners' relevance.

Confidence

Table 23

Mann-Whitney U Test for Learners' Motivation in Terms of Confidence

Group	N	Mean Rank	Sum of Rank	Wilcoxon w	Z	Mann-Whitney U	P value
Control	42	45.62	1916.00	1654.00	-1.39	1.39	0.16
Experimental	42	39.38	1654.00				

Table 24

Descriptive Statistics for Learners' Motivation in Terms of Confidence

Groups	N	Mean	SD	Minimum	Maximum	Median
Control	42	28.52	2.92	18.00	35.00	28.00
Experimental	42	28.09	1.90	23.00	32.00	28.00

Table 23 shows that there were no statistically significant differences between the experimental ($M = 35.19$, $W_s = 1654.00$, $z = 1-.39$) and the control group ($M = 28.52$, $W_s = 1654.00$, $z = 1-.39$) in terms of confidence; the value of significance level was 0.16, which is greater than (0.05) alpha level, and that indicates not statistically significant between both groups. The mean

score of the control group ($M = 28.52$, $SD = 2.92$, $Mdn = 28.00$) was close to the experimental group ($M = 28.09$, $SD = 1.90$, $Mdn = 28.00$, $z = -1.39$, $p > 0.05$). The previous result shows close score in Mdn between experimental and control groups. The analysis findings indicated that the effect of an interactive e-book was not statistically significant to promote learners' confidence.

Satisfaction

Table 25

Mann-Whitney U Test for Learners' Motivation in Terms of Satisfaction

Group	N	Mean Rank	Sum of Rank	Wilcoxon W	Z	Mann-Whitney U	P value
Control	42	45.12	1895.00	1675.00	-1.18	1.18	0.23
Experimental	42	39.88	1675.00				

Table 26

Descriptive Statistics for Learners' Motivation in Terms of Satisfaction

Group	N	Mean	SD	Minimum	Maximum	Median
Control	42	25.62	2.87	18.00	30.00	24.00
Experimental	42	24.93	2.28	18.00	30.00	24.00

In Table 25, the Mann-Whitney U results shows no statistically significant differences between the mean scores of the experimental and control groups in using interactive e-book on L2 learners' motivation in terms of satisfaction; the value of significance level is (0.23) and that is greater than (0.05) alpha level and it is not statistically significant. The previous results indicate that both groups obtain close score in satisfaction component. The mean score of the control group ($M = 25.62$, $SD = 2.87$, $Mdn = 24.00$) was close to that of the experimental group ($M =$

24.93, $SD= 2.28$, $Mdn = 24.00$, $z = -1.18$, $p > 0.05$). The analysis findings indicated that the effect of an interactive e-book was not statistically significant to promote learners' satisfaction.

Total Score

Table 27

Mann-Whitney Test for Learners' Motivation Total Score

Group	N	Mean Rank	Sum of Rank	Wilcoxon W	Z	Mann-Whitney U	P value
Control	42	49.73	2088.50	1481.50	-2.78	2.78	0.06**
Experimental	42	35.27	1481.50				

Table 28

Descriptive Statistics for Learners' Motivation Total Score

Group	N	Total Score	SD	Minimum	Maximum	Median
Control	42	126.74	8.21	95	142	124.50
Experimental	42	126.28	7.75	105	143	123.00

Table 27 shows that there were statistically significant differences (0.01) alpha level between the mean scores of the experimental and control groups in using an interactive e-book on L2 learners' motivation in terms of total score, in favor of the control group with score of ($Mdn= 124.50$, $Ws= 1481.50$, $M= 49.73$) compared to ($Mdn= 123.00$, $Ws=1481.50$, $M= 35.27$) in the experimental group. The mean score of the control group ($M = 126.74$, $Mdn = 124.50$) was close to that of the experimental group ($M = 126.28$, $Mdn = 123.00$), $z = -2.78$, $p > 0.05$. The previous result indicates that the control group showed significantly higher motivation in learning through traditional paper-based materials.

Qualitative Phase

In this study, I employed a qualitative approach to uncover the participants' experiences in using an interactive e-book to learn Arabic VP idioms. The explanatory sequential design in this study suggested utilizing participants' perspectives to understand the findings from the quantitative data. Although the quantitative part of pre-test and post-test results can provide adequate insights about the participants' achievements in learning Arabic VP idioms, the participants' perspectives, difficulties in e-book learning, strategies of learning Arabic idioms, recommendations for improvement, and overall thoughts of e-book learning experience should be uncovered through an appropriate qualitative approach. In this section, I report the qualitative findings that highlight participants' perceptions of using e-books to learn Arabic VP idioms.

Qualitative Data Analysis

The third question of this study examined the participants' experiences, and it was stated as follows: *How do L2 learners of the Arabic language studying in Saudi Arabia perceive the effectiveness of using an interactive e-book in learning VP idioms?*

To answer this question, I employed semi-structured interviews to highlight the participants' experiences in the experimental group who received an interactive e-book to learn Arabic VP idioms. I randomly invited seven participants who engaged in an in-depth interview to address 13 questions related to their experiences learning VP idioms using an interactive e-book. After recording the participants' comments from a ZOOM meeting and transcribing each interview, I applied thematic analysis based on a constant comparative approach. This method considers detecting, analyzing, and discovering the broader themes of the target data (Braun & Clark, 2006). Using this approach, three levels of analysis were utilized: open coding, axial

coding, and selective coding. Six themes were identified based on a summary of the participants' perspectives.

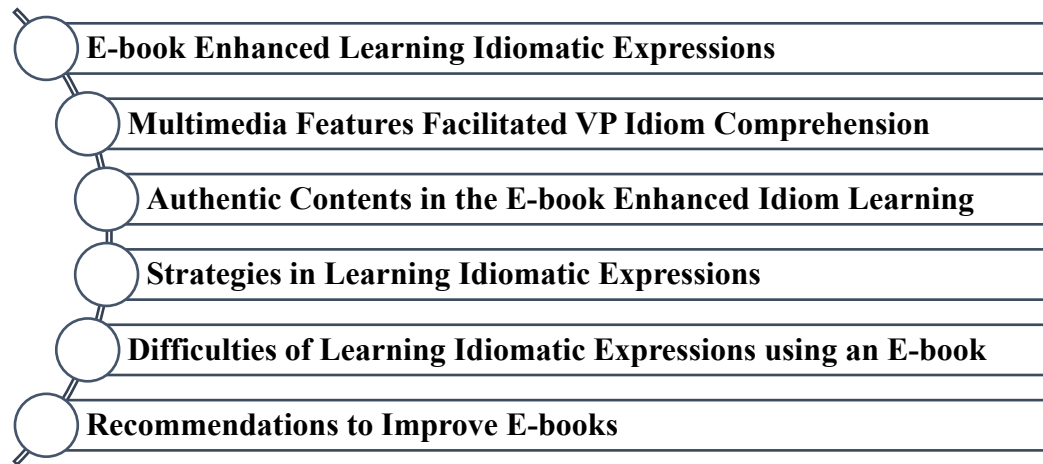


Figure 15

Thematic Analysis Results

Revisiting the interview transcript, I was able to collect several themes based on participants' perspectives that included: (1) the e-book enhanced learning Arabic VP idioms; (2) multimedia features in the e-book facilitated VP idiom comprehension; (3) authentic contents in e-book promoted participants' awareness of VP idioms; (4) participants applied several strategies in the process of comprehension VP idioms; (5) difficulties of learning VP idioms using the e-book; and (6) participants' recommendations of e-book improvement in VP idioms. Finally, I provide a summary based on my interpretation of the results of the qualitative part. In the qualitative analysis phase, the Participants were labeled as P1, P2, P3, P4, P5, P6, and P7.

1. The E-book enhanced learning idiomatic expressions

First, most participants expressed a lack of technological tools, namely CALL and MALL, which were purposely designed to learn Arabic idiomatic expressions. P3 mentioned:

It was the first time for me learning Arabic idioms through this e-book. I used some websites to learn Arabic vocabulary and read articles, but I usually focused on reading the Arabic language through regular books [paper-based] in my language program. I wish I had technology like this e-book to teach me more about writing a good academic paper and more about idioms. I see idioms each time, especially when I watch movies or meet with Arabic speakers outside the language program on my university's campus, but I do not find any technology that teaches me idioms ... to learn about idioms, I must read the Arabic dictionary or ask my Arabic friends at King Saud University... YouTube has few videos, but those videos do not teach more about academic ways of speaking and writing in Arabic. I will use this e-book as a reference because I have an opportunity to learn about Arabic idioms. I always check my iPhone store to see if I can find a mobile app that teaches Arabic idioms or Saudi dialects because I want to speak easily, like with Arabic speakers. I learned in our language program about Arabic vocabulary and how to read and write in formal Arabic language, but for me I want to learn more about idioms, wisdoms, and poems because they are very important in Arabic culture and history.

However, three participants addressed learning Arabic idiomatic expressions implicitly and explicitly using different technological tools. The participants noted using mobile applications, where they have access to a library app that has a variety of Arabic books. Two participants had experience with social media platforms, such as Twitter, Instagram, and Snapchat. These mobile apps became important resources in providing participants with access to authentic Arabic language materials and idiomatic expressions. Although these social media platforms were not purposefully designed for teaching and learning languages, they offered plenty of opportunities to observe the authentic use of idiomatic expressions, as stated by P6:

I have an app in my phone called Arabic Library that has some free books to read online. I read two pages daily to improve my reading skills, but I don't have any technology that specifically teaches idioms. I also learn through an online website called Interactive Arabic Network that provides different topics to read about in Arabic for academic purposes, but most of my time I spend browsing my apps such as WhatsApp, Snapchat, and Twitter. I found many Arabic language messages and posts from famous actors and sports figures, and many of them use slang language. It is so funny because I keep the posts and learn about vocabulary and idioms to improve my speaking skills

Developing idiomatic competence is one important benefit that participants highlighted in the interview. Various skills were applied while using e-books to comprehend and produce target idiomatic expressions. P1 stated that, “After learning, I began collecting expressions that I didn’t know and tried to figure out their meaning.” The e-book experience created awareness of VP idioms and how they occurred in authentic contexts. P7 shared that he observed the VP idioms’ appearance in the text and understood the benefits of using VP idioms. He stated:

Idioms in the text looked different because they had several words that I didn’t understand but Arabic speakers say them to avoid truth or hide something. I learned funny idioms also in this e-book ... anytime I read article in the Arabic language, I will look for idioms that have specific meaning, I mean a figurative meaning and real meaning, and I will start collecting many expressions and read more about them to know how and when I should say them with Arabic speakers. Also, I like to find idioms that have similar meanings in the Urdu language because it is my first language

The production of idioms was another notable skill that the participants mentioned related to idiomatic competence. One participant stated that learning VP idioms in the e-books shifted his desire from avoiding idioms to producing idioms. He stated, “I always skip and avoid speaking idioms, but after this experience, I tried to say at least one complete expression each day.” P4 shared his experience before and after receiving VP idioms in the e-book:

It was an amazing experience. During my interactions with native speakers, I always avoid using idioms or asking about their meaning because I am afraid of making mistakes or causing misunderstandings to my attention. But after learning the various idioms in this e-book, I feel more confident to start using idioms and learn more about them

2. E-book multimedia features such as pictures, sounds, and textual enhancement facilitate VP idiom comprehension

All participants underlined an important aspect of multimedia features embedded in e-books in providing an enjoyable environment for learning Arabic VP idioms. This includes pictures, sounds, and textual enhancements. In this theme, the participants highlighted the positive and negative aspects of multimedia components and the impact on the participants' overall learning experience. Pictures presented in an interactive e-book show elements of the literal meaning of the target VP idioms. Regarding these pictures, P2 mentioned:

For me, I think the most important thing in this e-book was the pictures on each page because they showed so much information about the [idioms] meaning. On the first page in this e-book, I looked at the pictures under the article and I thought they were not related to the article but when I started reading the article and looked at the pictures again, I found those pictures tell something about the idioms meaning ... sometimes I understand their meaning but not all the time. I can say that those pictures help[ed] me understand 80 of the [idiom] meaning. For example, when I saw the picture of men holding the stick from the middle, I thought it meant to stay in the middle between things. But, when I read the article again, I understand the meaning because the article says something about the employee liking a new manager because he holds the strike from the middle, and then I immediately understand the meaning

Using pictures in an interactive e-book made learning idioms enjoyable and helped to change the negative view of the difficulty in learning idioms. P5 stated that he found pictures to be more enjoyable in learning idioms:

I really did not understand the idioms meaning in the text and I don't know why writers used them instead of telling what they want to directly, but I enjoy learning idioms through the pictures... those pictures are like the ones at the end of newspapers, and I think those pictures presented the idioms in funny and attractive ways. Those pictures are funny and make learning idioms easy, much better than regular text only

However, it is important to note that one participant reported negative aspects of pictures in the e-book. Two participants expressed that they found the pictures caused confusion and distracted them from understanding the VP idiom's meaning. Furthermore, the participants stated that the

quantity of information and variety of objects, such as a horse, sword, and animals, in one picture caused delays in extracting the idiom's meaning. P7 highlighted this issue in the following comment:

I think the truth is that some pictures in the e-book were confusing and made me think about the meaning a lot because they have much information and a lot of objects, such as the idioms of رجع بخفي حنين. It had so many objects, such as a sword and a horse or a sword and a camel... I think the design of those pictures did not help me to identify the actual meaning. I was thinking that those pictures were related to the article subject, but I still remember a picture about men eating food because I thought that the idiom was related to the food. But the article was about a sport, not food, so that food picture did not help me to make connections with the sport article

Another positive contribution of multimedia features was the sounds embedded in the e-book.

The sounds of "clapping hands" at the beginning and end of the e-book chapter enhanced learners' attention and increased their desire to complete all the articles. According to P3:

The sound of clapping hands at the beginning of the chapter was surprising and I not expected in any book. It made me focus on what is going to appear on the next pages ... I wish there was also an audio recording that read the page if you clicked on sound button so I could make sure that I am reading correctly, but I was happy when I completed all articles and listened to sound again. I think that the time went quickly, but I enjoyed it

P6 mentioned:

I liked the sound at the beginning because I got excited to read and move to the next page. It reminded me of computer games when you started hearing the sound before playing the games

Textual enhancement (TE) appeared as another aspect of multimedia features in e-books that helped learners draw their attention to VP idioms. The target VP idioms are highlighted in bold text in the e-book. P1 indicated that TE helped him distinguish VP idioms from other texts in the e-book:

I always looked at these idioms highlighted in the article, and I knew that those expressions were important because they have different colors in the sentences in the paragraphs

P2 reported:

I learned about the expression highlighted in the texts, and for many of them, I didn't understand their meaning without reading the whole article

Furthermore, the participants stated that TE helped them create a connection between target VP idioms and context. P4 framed it so:

I read all articles, but I stopped each time on the sentences highlighted in text [VP idioms] and I tried to understand them first because if I understood them, I would know the whole idea about the aim of article. But I was not able to do that in many times without reading the whole page again, and sometimes I just guessed the meaning

3. The e-book's authentic materials enhanced learners' idiomatic competence

The content of all articles presented in the e-book environment was taken from official newspapers in Saudi Arabia. They are authentic materials in that they were originally created for native speakers and were not intentionally designed for the purpose of teaching and learning Arabic. The participants' perspectives about the authentic contents of the e-book were positive towards the understanding of the actual use of idiomatic expressions in daily speaking with native Arabic speakers. It is important to note that some participants addressed the issue of not receiving authentic contents of idiomatic expressions while learning Arabic at King Saud University. For instance, P6 stated:

I saw many idioms that I usually read in newspapers. I like reading newspapers because they have large vocabularies and idioms that do not exist in my reading materials in the Arabic class at King Saud University ... I think it is important for me to learn about them [idioms] because I want to speak like native speakers. I found it hard to know about them [idioms] without learning from specific books that had all idioms. Also, many idioms do not come from the formal Arabic language [Alfusha] because I have friends from south and north Saudi Arabia who speak different dialects and use different idioms. I rely on newspapers and TV shows to learn more about idioms because I want to teach [them] to my Arabic students in my

country [Congo]... I will become a certified language teacher, and I want to teach them [idioms] to my students

P2 justified his lack of idiomatic competence by referring to the absence of authentic materials in relation to his journey of learning Arabic:

My teacher did not like to spend time teaching us about them [idioms] because they were not important for us to learn ... Many times, I didn't know the meaning of idioms that native Saudi speakers say. I think we should learn about them [idioms], especially what people say in restaurants and schools. Although some idioms were introduced in the classroom, they were totally different in what I heard every day on the university's campus. I had to learn many of them [idioms] by myself to understand every conversation with local people because I don't like to hesitate when using them, and I don't like to be excluded from conversation

It is crucial to state that the authenticity of VP idiom materials may not only be attributed to the e-book environment as a host of knowledge but also to the natural appearance of VP idioms in a real context. According to P1:

I think if I learn idioms from either e-books or a regular book, I will be able to understand so many ideas that native Arabic expresses

Authentic materials in the e-book environment went beyond helping participants to notice the occurrence of VP idioms in real contexts to enriching participants' understanding of the cultural and background knowledge of stories behind some expressions. According to P4:

I enjoyed learning about the reason behind using some idioms, such as [عاد يخفي حنين], when I finished reading those newspaper articles. I was curious to know more about the story behind it [idiom], and I think it is such a funny story and absolutely an accurate description of human behavior in similar situations

P5 highlighted the roots of VP idioms in Arabic culture:

I realized many of the idioms we studied contain important stories that to go back thousands of years in Arabic cultural and history and I realized also that many of them [idioms] used some words from the Arabic cultural, such as camel, sold, ship, and sea

4. Strategies employed in learning idiomatic expressions via e-books

An important theme that emerged from the analysis was the participants' strategies employed to comprehend a VP idiom's meaning. Overall, all participants indicated applying various strategies, including relying on context, guessing, linking to their first language, and analyzing multimedia components, such as pictures and highlighted texts. The contextual element of idiomatic expressions in the e-book was an important strategy that the participants relied on to identify the meaning of target VP idioms. As a first attempt to understand the target idioms, most participants highlighted focusing on the contextual aspect. For instance, P3 described his process of idiom comprehension as follows:

At the beginning, I tried to read a whole paragraph and tried to understand the general meaning behind it. Of course, I didn't understand the meaning of the idioms at the beginning, but I tried to read the article again quickly. The paragraph information that had idioms helped me to think about their [idioms] meaning in my mind while reading... if there were no paragraphs and stories, I would not have any idea about their [idioms] meaning at all

However, some articles that had more information increased the participants' cognitive loudness and ultimately distracted them from understanding the meaning of VP idioms. As P5 stated:

I was able to understand idioms in different ways. For example, sometimes, I know the meaning from reading the context of the article. However, with the idiom يخرج من عنق الزجاجاة [to pass the battle nick], my first thought was this meant to drink something after a difficult situation, but when I read the paragraphs and I was able to understand it more correctly ... I think if I study them [idioms] inside the paragraphs, I will be able to understand many of them [idioms]. I also think that the context of the first article with a lot of information did not help me to understand the meaning because it I had so many meanings in my mind

Analyzing the pictures and expression components was another frequent strategy that the participants employed to determine the meaning of idiomatic expressions. Some interviewees argued that when facing unknown idiomatic expressions, they looked at pictures and tried to find evidence that pointed to the meaning. As one P1:

My strategies in knowing idioms' meanings took several steps. First, I read each word individually and tried to understand each word, and then I tried to understand

the whole meaning. If I still did not understand it, I looked at the image in the e-book and tried to guess its meaning by observing everything in the image. Some images that I saw in the e-book provided some information about the idiom's meaning

Importantly, two participants mentioned facing difficulties in analyzing the pictures. The clarity of pictures in terms of connection to the article context was not found and did not help them to identify the accurate meaning of the VP idioms. Talking about this issue, P2 stated:

If I didn't understand an idiom's meaning, I looked at funny pictures in all the articles because I knew they were related to the meaning. Some pictures, I think, were clear to understand, but others were not clear at all because some article subjects were not related to the pictures. I remembered that the article about sports in Saudi Arabia and the pictures was about someone in the battle. It was difficult to know the meaning, so I had to guess

P4 said:

Some pictures caused confusion for me because I had the initial meaning of the idiom in my mind, but when I looked at the pictures, I had different meanings. Of course, some of those meanings eventually would not be corrected

Relying on their first language appeared to be important when asking about strategies applied to knowing VP meaning. Although there were more than 16 first languages in this study, the participants indicated that they utilized their first-language background knowledge on many occasions as an attempt to find meaning that matched the target idiomatic expressions in the Arabic language. As P5 said:

Arabic and Urdu languages are similar in many ways, especially with idiom meanings. We have a similar expression to the idea that says *يطرق الحديد وهو ساخن* [to hit the iron while it is hot], but we use different words and we say to go on the street while the sun is hot, which means to go for the opportunity while it is available. When I read them [idioms] in the e-book, I remembered my language and thought about similar idioms in the Arabic language

Participants attempted to use first-language knowledge to understand the idiomatic expression's meaning in the Arabic second language. As P3 mentioned:

Sometimes, I remembered the idioms in my first language, and then I read the paragraphs again. I only knew the meaning of two idioms because we have similar idioms, but with different words in Russian.

Guessing is another strategy that participants employed to understand the meaning of idiomatic expressions' meaning. P1 stated, "Many idioms, I did not know their meaning, so I had to guess in my mind." P4 stated, "I guess the meaning that I think is suitable to the content I read."

5. *Difficulties of learning idioms via E-book*

Although all participants enjoyed learning VP idioms in the e-book environment, they reported difficulties due to technical issues of the e-book and linguistic aspects of VP idioms. The e-book environment requires an internet connection to access the content. The interactive e-book environment utilized in this study operated efficiently with Firefox and Google Chrome browsers. In this regard, technical issues appeared in the participants' responses. For example, one participant stated that "in the middle of reading a chapter I got kicked out of the e-book and I had to sign again using another device." P6 pointed out:

I used Safari as my main browser, and it was not allowing me to access quickly, and many times I went back to sign in again, but I switched to the Google Chrome browser, and it worked just fine

It is important for L2 teachers to understand such difficulties and carefully choose an appropriate technological tool that effectively enhances learners' performance during the learning process.

Another difficulty was related to the selected VP idioms and how they were close or far from the participants' first language. The level of VP idioms impacted the participants' comprehension and production of VP idioms. Due to the variety of first languages that existed in this study, all participants highlighted struggling to understand and produce some VP idioms that did not exist in their first language or that had different meanings. For instance, P3 made a

connection between idiomatic competence in L2 and having similar idioms and background knowledge in his L1. He stated:

I understand some of them [idioms] because we use the same idioms in my first language and many times, I use them to surprise my Arabic friends because they don't know that we share similar expressions

P7 reported more difficulty and reliance on a guessing strategy in his attempt to understand new VP idioms:

Some idioms were new for me and even nonexistent in my first language, and those were the hardest ones. It was difficult to think about the Arabic words and try to guess meaning after reading the content

6. Recommendations for idiom learning via E-book

The participants highlighted several constructive recommendations for ways to improve the e-book learning environment for the purpose of teaching VP idioms and the Arabic language.

These recommendations should be considered during the design and implementation phases in the language classroom. Overall, all participants indicated the necessity of designing technology that provides explicit instruction to teach Arabic idiomatic expressions. P2 addressed the significance of free technological tools, such as e-books, to enhance Arabic learning so:

I believe learning Arabic on apps and websites should be available for many students with low incomes for free, but I see a lot of online Arabic courses that teach vocabulary always ask for monthly payment

Another participant suggested adding interactive games to increase connection and motivation in learning VP idioms: "We would have had more fun and connection to learning idioms if there were games in the e-book." One participant expressed the need for collaborative efforts between learners to investigate VP idioms' meanings. For instance, one interviewee detailed how a collaborative approach in an e-book can help to understand the Arabic language and increase learners' engagement. As P5 stated:

I got distracted easily when I spent a long time reading online. However, I like to work with other classmates and discuss topics and learn more about unknown idioms. I would like to see group discussions after any section and have a specific time for each group to write their understanding of the idiom's meaning. I think e-books will be more interesting and engaging for students who do not like to read like me

Discussion of Findings

For the effects of an interactive e-book in promoting idiomatic competence, the results indicated a significant effect on the experimental group after engaging in the e-book learning environment. To begin with, learners' prior knowledge had no impact, since the result of the pre-test showed that there was no statistically significant difference between the two groups prior to utilizing the treatment. Conversely, after receiving an interactive e-book and engaging in reading ten articles that contained the target Arabic VP idioms, the post-test findings showed that there was statistically significant difference in favor of the experimental group. Although the effect size was low in comparison between the two groups, within the experimental group, the effect size was high based on total scores in the pre-test and post-test. Therefore, I concluded that the interactive e-book enhanced all participants' idiomatic competence. More specifically, it was clear that the participants who engaged in interactive e-books showed effective performance in the comprehension and production of Arabic VP idioms.

The results of the idiomatic competence test showed that even at an advanced proficiency level, learners may struggle to identify the target idioms and develop awareness of VP idioms (Liontas, 2015b). The difficulty of idiomatic comprehension and production is also linked to the similarities and differences between L1 idioms and the target L2 idioms, in this case, the Arabic language. This degree of translational similarity appeared to play a crucial role in idiomatic processing (Liontas, 2002a). The qualitative findings confirm Liontas' (2002a) study in several aspects: (a) the context of Arabic VP idioms had a significant impact on learners' idiomatic

competence at the Lexical Level (i.e., VP idioms that were similar in learners' L1 and the L2 Arabic language) and the Post-Lexical Level (i.e., VP idioms that were not similar across Arabic language and learners' L1); (b) L2 learners of Arabic language relied on different strategies to understand VP context idioms, such as relying on context, guessing meaning, and translation of idioms components; and (c) the role of vocabulary knowledge and the transparency of VP idioms' meaning had affects learners' idiomatic comprehension. Liantas (2017b) noticed that, unlike native speakers, learners of second languages try to create meaning for idiomatic expressions and bring that meaning side by side to the expression in their native language(s).

Regarding the technology utilized to facilitate idiomatic competence and motivation, the results of this study conform with Li (2019), who found that the social media application WeChat offered opportunities for adult L2 learners to grasp and retain the target VP idioms. However, this study was unable to demonstrate the effects of using e-books in promoting learners' motivation in four aspects: attention, relevance, confidence, and satisfaction. The study results agreed with Kohshnevisan's (2020) findings that using technology, such as AR-infused flashcards, increased VP idiom achievement. The findings of the current study are consistent with those of Alshaikhi (2018), who found positive effects of using TEs on the comprehension of idioms. Additionally, the qualitative part of this study conformed to Alshaikhi (2018), who indicated that learners rely on their first language as a major strategy to comprehend the target idiomatic expression, a finding that was reported repeatedly in the studies Liantas conducted since 1997.

Regarding multimedia features such as pictures and TEs, the findings from the interviews corroborate the ideas of Walker (2020), who suggested using generated images as an important instructional intervention to help in learning VP idioms. According to the participants, the

positive effect of using authentic contexts in learning idiomatic expressions creates awareness and understanding of idioms. This conforms with Liantas's (2002, 2015a, 2017a) suggestion of using VP idioms in authentic contexts for learning idiomatic expressions. In the Arabic language program, Liantas (2002, 2008, 2015a, 2017b) recommends using authentic contexts and criticizes providing material that is purposely designed for L2 and contains content that is not used by native speakers of the target language.

The second question was about the effect of utilizing an interactive e-book on learners' motivation. For these questions, the researcher employed the IMMS survey based on Keller's ARCS model to explore learners' motivation after utilizing an interactive e-book. The findings of the survey showed that there were no statistically significant differences between the experimental and control groups in all four components of the ARCS model. However, regarding the analysis of the total scores in all ARCS aspects, the control group that learned through traditional paper-based lessons (mean = 126.79) scored relatively higher than the experimental group (M = 126.54). The findings of the IMMS indicated that there was not statistically significant of utilizing an interactive e-book in learners' motivation. It was anticipated that the participants who learned through an interactive e-book would show higher motivation than the participants who learned through a paper based. It is possible that the failure to obtain a statistically significant result in motivation in the experimental group can be explained so:

- The expectation of showing high motivation after learning 10 VP idioms, reading 10 articles, and answering both pre-test and post-test questions may have been highly optimistic, based on the limited time of the research sessions.
- Due to not having enough computer devices in the experimental location, some participants used their personal phones to access an interactive e-book. This may have

impacted learners' motivation because they did not see the content in the actual size of the intended design.

- The qualitative findings reported that some participants in the experimental group faced difficulties in accessing the content due to technical issues, such as the type of browsers used, internet connection, and website bug issues in the host platform. These issues may have impacted learners' motivation throughout the process.
- Learners' first language impacted learning the VP idioms in the e-book. Learners who found similar meanings for VP idioms in their first language may have shown higher motivation in terms of confidence and relevance. While the learners' first language was not considered in selecting VP idioms, it quite possible that learners in the control group found more VP idioms existed in their first language, and, therefore, they were highly motivated during the learning process.
- The qualitative findings showed that some pictures increased learners' cognitive loudness. The design of multimedia components was based on literature suggestions for adding sounds, pictures, learning goals, and expectations. However, the selections of sound, pictures, textual color, and font size were based on the researcher's assumption that the selected multimedia features could increase learners' motivation in terms of attention, confidence, relevance, and satisfaction.

The findings of the motivational survey do not support previous research that reported the positive impact of using an interactive e-book on increasing learners' motivation and level of engagement compared to traditional printed books (Bickel, 2017). The current study does not confirm Sung and Tings' (2017) results, which found that e-book reading features improved

learners' motivation to understand English reading texts in an ESL classroom. The findings of another study that utilized an IMMS to explore learners' motivation in learning English VP idioms showed statistically significant differences only in two subscales of IMMS: confidence and satisfaction (Khoshnevisan, 2020).

The learners' perspectives in this study showed positive experiences of using interactive e-books to learn VP idioms. Overall, the participants noted that e-book features, such as pictures and textual enhancement, had important impacts on their idiomatic competence and motivation. These findings align with Paivio's DCT theory (1990), in which he argued that learning is promoted when new information is received through both verbal and image codes. Consequently, learners can make connections between words, phrases, and expressions and their complementary images. However, participants reported difficulties regarding the selected VP idioms, in which some of those idioms did not exist in their first language.

The qualitative findings showed that participants attributed their positive experience not only to the e-book system itself, but to the multimedia features embedded in the target reading chapter. This positive experience in the current study confirms the findings of other studies that indicated positive outcomes in promoting reading comprehension using multimedia features, such as glossing and illustration in e-books (Alsofyiny, 2019; Proctor et al., 2007). However, the findings of student perspectives in this study contradict those of Lam and McNaught (2009), whose results reported negative experiences with using e-books in L2 contexts in terms of the need for more functions, such as having the ability to highlight texts and write notes on screen while reading.

While learning VP idioms, participants employed various strategies, such as relying on content, guessing meaning, using background cultural and language knowledge, and analyzing

VP idiom components. One important observation in this study was that participants had more than 17 first languages, which played a significant role in idiomatic comprehension and production. The transparency of VP idioms depended on the semantic and lexical distance between the participants' first and second languages. These findings conform to the notion of lexical/image continuum addressed by Liontas (1999). He indicated that perceived idiomatic expression appears on three levels: the Lexical, Semi-Lexical, and Post-Lexical levels. The participants indicated that it was easy to understand and produce a VP idiom if it matched what they knew in their L1 at the lexical and semantic levels. Conversely, if VP idioms did not exist in the participants' L1 or existed but with different meanings, then participants relied on other factors, such as VP idiom content and using guessing strategy.

Multimedia features included pictures and textual input that assisted participants' understanding of Arabic VP idioms. Participants' preceptive of these features in the interactive e-book concurs with Mayer's (2001) cognitive theory of multimedia. Providing the target knowledge in learners' visual and verbal channels can ensure that information is processed and applied to the learners' working memory. Textual enhancement can be an effective approach to assist learners in mastering idiomatic expressions (Liontas, 2015a). However, some participants mentioned difficulty in identifying the meaning of VP idioms due to the complexity of pictures, which increased learners' cognitive loudness. It is important for language teachers to design multimedia features that serve learners' understanding of VP idioms. The design of learning materials should be done in an optimal way to enhance the brain process of learning new knowledge, and cognitive loudness should be addressed to learn without frustration (Sweller, 1988)

The fast comprehension was on VP idioms that fully match in learners' first and second language (Lexical-level or LL idioms) more than non-matching idioms (Post-Lexical Level) or partially-matching (Semi-lexical Level). The result of participants' strategies on comprehension of VP idioms such as relying on their first language, and analyzing the context confirm the theoretical model of *the Transactional Idioms Analysis TIA*. According to Liantas (1999):

“1) SL readers are quite capable of detecting VP idioms in texts successfully using a variety of contextual cues and reading strategies, including, but not limited to, word and idiom recognition, lexical access and retrieval, contextual and pragmatic support, background and world knowledge, formal schemata, and strategy use; 2) matching idioms between LI and L2 (Lexical-Level or LL Idioms) are processed and comprehended faster and with greater ease than partially-matching idioms (Semi-lexical Level or SLL Idioms) or non-matching idioms (Post-lexical Level or PLL Idioms) between LI and L2 and, finally, 3) increased context and an individual's pragmatic knowledge exert a significant impact on the comprehension and interpretation of all VP idioms, especially on those of the PLL type” (p. 18).

Summary

At the beginning of this chapter, I presented demographic information about participants' first language, years of learning Arabic, and self-rating of fluency in Arabic. Next, I reported the findings of three research questions. The first question regarded the effects of utilizing an interactive e-book in promoting idiomatic competence. The results of the pre-test showed that there was no statistically significant difference between the participants who learned through e-books and traditional paper-based methods. However, the post-test findings showed that

participants in an interactive group performed more effectively than the participants in the control group. It was concluded that using an interactive e-book to learn Arabic VP idioms helps enhance learners' idiomatic competence.

The second question concerned the effects of e-books on promoting learner motivation. I presented the quantitative findings of the IMMS survey in four subcategories: attention, relevance, confidence, and satisfaction. By comparing the results of both groups (experimental and control), it was found that there was no statistically significant difference between the groups in all IMMS subcategories. I concluded that there was no effect of using an interactive e-book in promoting learners' motivation.

For the third question, I employed thematic analysis to explore participants' perspective of using an interactive e-book to learn VP Arabic idioms. The results showed that participants (a) reported positive experience in leaning via e-books, (b) applied various strategies to identify VP idioms' meaning, (c) indicated positive impact of multimedia features, (d) highlighted difficulties in using e-books, and (e) provided recommendations to improve e-book learning experiences.

CHAPTER FIVE: CONCLUSIONS AND IMPLICATIONS

Introduction

This dissertation investigated the effects of using an interactive e-book to promote idiomatic competence and motivation among L2 learners of the Arabic language in Saudi Arabia. I utilized an explanatory sequential mixed methods design to provide evidence on (1) the effectiveness of an interactive e-book in promoting idiomatic competence; (2) the impact of learning idiomatic competence via an interactive e-book in learners' motivation; and (3) the perception of L2 learners on using an interactive e-book to learn idiomatic expressions, namely VP idioms. This study adapted three theoretical frameworks including *The Dual Coding Theory* (1990), *The Constructivist Learning Theory* (1978), *The Cognitive Theory of Multimedia Learning* (2001), and *The Transactional Idiom Analysis (TIA)* (1999, 2002). Furthermore, the framework of idiomatic competence and VP idioms were adapted from Liantas's (1999, 2002) original research to help me in the study design and implementation of the content of idiomatic expression via an interactive e-book.

In this chapter, I provide a summary of the findings, highlight the limitations of this dissertation, present pedagogical implications, and review future research and direction.

Summary of Findings

The first question in this dissertation—*What are the effects of interactive e-books in promoting idiomatic competence?*—examined the idiomatic competence of advanced Arabic

learners. This was accomplished by examining the pre-and post-tests results. Findings indicate that there was a statistically significant difference when using an interactive e-book to promote idiomatic competence. Indeed, the interactive e-book enhanced the learning of VP Arabic idioms in the L2 classroom. This finding aligns with Liantas's (2002a) recommendation that, particularly, in the L2 context, the learning of VP idioms can and should be introduced via the judicious use of authentic materials, especially those that display audiovisual modalities

The second question—*What are the effects of interactive e-book on L2 learners' motivation?*—explored learners' motivation by using IMMS. Although the findings were not statistically significant between groups, the total scores of learners' motivation indicated statistically significant of using (traditional paper-based learning). Therefore, an interactive e-book in this study failed to enhance learners' motivational levels, including influencing attention, relevance, confidence, and satisfaction.

The third question highlighted participants' experiences of using an interactive e-book to learn VP Arabic idioms. The findings of the qualitative section indicate the following:

- The participants reported an overall positive experience in which an interactive e-book enhanced their idiomatic competence in comprehension and production of target VP idioms.
- The participants applied various strategies to identify the meaning of VP idioms, including guessing, relying on context, analyzing the presented picture of the idioms, and checking the first language for similar expressions. The participants' VP idioms comprehension strategies, such as relying on their first language and analyzing the context, support the Transactional Idioms Analysis (TIA) theoretical model. As Liantas (1999) explains, SL readers can successfully identify VP idioms in texts using various contextual cues and

reading strategies, including word and idiom recognition, lexical access and retrieval, contextual and pragmatic support, background and world knowledge, formal schemata, and strategy use. Additionally, matching idioms between LI and L2 (Lexical-Level or LL Idioms) are comprehended more easily and quickly than partially matching idioms (Semi-lexical Level or SLL Idioms) or non-matching idioms (Post-lexical Level or PLL Idioms) between LI and L2. Finally, increased context and an individual's pragmatic knowledge have a significant impact on the comprehension and interpretation of all VP idioms, especially PLL idioms.

- Multimedia features, such as pictures and TE, played a significant role in helping learners to recognize and comprehend target VP idioms. These results are consistent with Paivio's Dual Coding Theory (1990), which suggests that learning is enhanced when new information is presented in both verbal and visual formats. This enables learners to link words, phrases, and expressions with their corresponding images. However, participants encountered challenges with certain VP idioms that were not present in their native language. The qualitative data revealed that the multimedia elements in the e-book, such as pictures and accompanying text, helped participants comprehend Arabic VP idioms. The participants' perception of these interactive features aligns with Mayer's (2001) cognitive theory of multimedia, which emphasizes presenting information through both visual and verbal channels to facilitate learning and retention of information in working memory.
- The participants pointed out difficulties in learning using interactive e-books related to internet connection, the subject of the articles selected, and type of browsers needed to access the content smoothly.

- The participants emphasized the role of authentic context in promoting real situation exposure to target VP idioms.
- Recommendations for improving the e-book learning experience were highlighted, such as adding interactive games, discussions, and receiving immediate feedback.

Pedagogical Implications

The findings of the study have several implications for Arabic teaching and learning. More specifically, the implications revolve around three areas: teaching idiomatic expressions in L2 classrooms, incorporating multimedia features in teaching idiomatic expressions, and underlining idiom processing models in L2.

Teaching Arabic idiomatic expression in L2 classroom. Learning a second language is a long-term process that involves not only learning individual words but also having the ability and readiness to comprehend and produce idiomatic expressions in daily conversations with native speakers. Social interaction outside the Arabic language classroom requires learners to engage in productive conversation in which idiomatic expressions are used effectively and accurately. Yet, based on learners' perspective, few opportunities existed for explicit instruction, curriculum development, and the use of technology-based applications that are designed purposefully to promote learners' idiomatic competence. Even in an academic setting, Liantas (2008) argues that idiomatic expressions can be utilized in various registers, such as informal communication, academic writing, and academic speech. L2 teachers of Arabic language should be provided with sufficient exposure to learn idiomatic expressions in their language classrooms. Similarly, teachers should not neglect learners' individual differences and learning preferences. The findings of this study suggest the efficacy of providing idiomatic expressions in the form of

visual and textual context. Research has shown that L2 learners have had positive experiences in learning expressions through both visual and audio content (Alghamdi, 2022; Liontas, 2002a; Z. Li, 2019; S. Li, 2022; Luz-Ayde, 2021).

Arabic researchers and L2 teachers alike are counseled to employ Liontas's *Idiom Diffusion Model of Second Language* (1999, 2002b), which provides much food for thought as well as important factors for Arabic language teachers to consider when designing curricula and creating learning experiences targeting Arabic idiomatic expressions. From the beginning, Arabic teachers should understand the distinction between L1 and L2 in processing idiomatic expressions. For L1, learners use their mental lexicons. However, L2 learners of the Arabic language seek to find a new lexical entry for processing target idiomatic expressions. The findings of study confirm the IDM observation of L2 VP idioms processing. More specifically,

The learners' first language plays a critical role in processing. If L2 learners of Arabic language find a full match in their first language of the target idiomatic expression (LL), or similar match (SLL), the comprehension will be significantly faster.

To promote idiomatic comprehension and production of VP idioms, teachers should make productive use of the various learning modalities to ensure that learners can indeed make the needed connections between the verbal and mental imagery of VP idioms targeted. During the idiomatic process, teachers should also address learners' strategies that help them identify and grasp idiomatic meanings. Based on interactive e-book learning experiences, several suggestions can be highlighted when designing instruction related to learning Arabic VP idioms.

Learn VP idioms through authentic contexts. According to Liontas (2002), when introducing idioms in an L2 context, it "should be done in a manner that mirrors authentic language use, furthermore, that these idioms need to be current, interesting, and useful in real-life

situations” (p. 7). By utilizing authentic materials such as videos, newspapers, comics, and podcasts designed for native speakers, learners should take advantage of such opportunities and materials that both individually and collectively help learners to recognize the presence of idiomatic expressions in real-life conversations. Lontas (2002a, 2015a, 2017b) criticized language programs as overusing non-native-like materials that are purposely designed for teaching and learning a second language. Arabic materials may be driven by the institution’s own goals rather than the learners’ needs. Although some idioms may be included in Arabic L2 textbooks, they may stem from teachers’ assumptions, not from the actual idioms’ frequency and occurrence in native speakers’ conversations and writings. Activities in the Arabic classroom should enhance the authentic production of idiomatic expressions, such as conducting a job interview or ordering food from a restaurant. Lontas (2018a) provides suggestion on how to use authentic materials to teach figurative speech and that can be successfully utilize in teaching VP idioms in Arabic classroom. He addressed that so:

To attain the success envisaged here, teachers are advised to begin their figurative language journey by first searching for, identifying, and collecting a number of figures of speech from different types of texts and media sources. More specifically, television shows, movies, songs, commercials, and YouTube videos employing segments of figurative language abound online. Print material involving picture books, newspapers, headlines, product advertisements, brochures, events announcements, or horoscopes, for example, not to mention text segments from children’s or adolescent literature, poetry, song lyrics, or both, bear equally fruitful ground for harvesting a select few suitable figures of speech. Students could aid this effort by supplying their own collection to the library of figurative language. Over time, said collection is certain to expand and multiply both in quantity and variety. The use of effective cataloguing skills should make access and retrieval of such representative examples simple as ABC (Lontas, 2018a, p. 5)

Utilizing multimedia features to teach VP idioms The findings of this study suggest employing multimedia features such as pictures, audio, and TE to enhance learners’ comprehension and production of VP idioms. Research has shown that using both visual and audio contexts can

improve idiom comprehension (Alshaikhi, 2018; Khoshnevisan, 2020; Larsen-Walker, 2020; Z. Li, 2019; S. Li, 2022; Liontas, 2002a). In the cognitive theory of multimedia learning, Mayer (2009) argued that optimal learning experiences should combine both pictures and words. In an interactive e-book, Arabic VP idioms were presented through highlighted texts and pictures to maximize learning. Arabic teachers should utilize different multimedia resources that contain idiomatic expressions, such as movies, podcasts, comics, and newspapers. These resources are available in Arabic, and teachers can find many opportunities for teachable moments. Learners can work in groups to identify an expression and discuss figurative and real meaning. During this discussion, teachers can work to develop learners' awareness of idiomatic expressions in the Arabic language, introduce the cultural background of idioms, emphasize learners' first language, recognize learners' strategies to grasp the meaning, and provide several opportunities for meaningful idiom production.

Limitations and Further Research

Several important limitations of this study need to be considered. To begin with, due to the violation of the normality assumption of the data set, a non-parametric analysis (Mann-Whitney U test) was used in this study. The Mann-Whitney U test is a non-parametric that utilized in this study to avoid any effect of outliers. However, having a larger sample size can ensure the normality of distribution, and researchers would be able to use a parametric test.

The VP idiom selection and how they related to the participants' first language were limited. Although all participants were adult learners of the Arabic language with more than 17 first languages, such as French, Urdu, Mondrian, and Swahili, it would be possible that some of the Arabic VP idioms selected in this study were either quite similar or totally different from the participants' first language. Based on the Idioms Diffusion Model (IDM), learners can face

difficulties if their target idioms do not match their L1. Conversely, learning the target idiomatic expression in L2 can be easy if learners find similar expressions in their L1. Therefore, it is important to note that the VP idiom selection in this study did not consider learners' first language. Previous research did control for VP idiom selection (Liontas, 2002a).

The E-book technology and its features. The interactive e-book has several features that were not fully integrated in this study, such as reading games, collaborative discussions, and reading assessments. Some of these features were excluded because they required programming skills to modify the interface to the Arabic language. If this programming were possible, learners who received all e-book features could show different outcomes in idiomatic competence and motivation.

The time spent in the learning session. Due to COVID-19 regulations in Saudi Arabia when this study was conducted, it was difficult to have both experimental and control groups (84 total participants) stay for a long time. Although an online session can be an option, learning through an interactive e-book required training to access the content, internet connection, and computer labs with the capacity to accommodate 42 participants, especially when learners stated that they did not own personal laptops. Learners' performances regarding idiomatic competence and motivation may have been different if they spent more time on the experiments, such as four weeks or a whole semester. Future adjustments to the time spent on the e-book may thus have beneficial results in this regard. Furthermore, learners received a post-test and IMMS survey immediately after they finished reading. It is possible that learners had recent knowledge about idiomatic expressions. Future studies may want to account for this. Moreover, it may be beneficial to provide a delayed post-test to examine learners' knowledge and retention of idiomatic expressions.

Validity of the idiomatic competence test. There was a lack of validated tests available for examining Arabic idiomatic competence. For this reason, the researcher provided his own test. Although the researcher reviewed recent studies to find validated questions that contained idiomatic expressions, it was not anticipated to test the validity of idiomatic competence through an extensive procedure considering the time and resources available in this study. Future studies could provide a pre-validated test to examine Arabic idiomatic competence in an L2 setting.

Future Research Recommendations

During the process of completing this study, I reviewed several recommendations that could be considered herein for future research, in the hope that such recommendations may highlight future research on technology's impact on idiomatic expression learning, motivation in learning Arabic idioms, e-book features in promoting idiomatic competence, and a qualitative approach in learning idiomatic expressions.

Although many studies have utilized VP idiom instruction supported by technology-based tools focusing on improving L2 English idiomatic competence (Alshaikhi, 2018; Alghamdi, 2022; Khoshnevisan, 2020; Larsen-Walker, 2020; Lontas, 2002a; Z. Li, 2019; S. Li, 2022; Luz-Ayde, 2021), the review of the literature on Arabic idiom learning demonstrated the need for future research that directly explores the impact of various technologies on Arabic idiom expression learning such as WhatsApp, Facebook, Snapchat, game-based learning, augmented reality (AR), virtual reality (VR), and artificial intelligent (AI).

Future research may focus on the impact of utilizing authentic materials on idiomatic comprehension and production. Lontas (2002a, 2008, 2015a, 2017a) advised that learning idiomatic expressions should be learned through authentic context, and materials that do not adhere to matters of authenticity should be avoided. Conducting a qualitative inquiry using

various data sources regarding Arabic learners' experiences of learning idiomatic expression in authentic materials can provide more detailed findings of a learner's development of idiomatic competence. The qualitative data resources such as content analysis of a learner's production of idiomatic expression, notetaking, observations, and reflection journal entries, can provide valuable insights into the effects of utilizing authentic content in learning Arabic idioms.

Future studies could also explore the effects of multimedia features, such as pictures, sounds, animations, comics, and textual enhancements, in promoting the comprehension of idiomatic expressions. Several tools can be utilized to provide idiomatic learning experiences, such as PowToon for animation stories, Adobe Audition for sounds, and Canva for pictures and textual enhancements. Providing deep insights into learners' strategies in idiom comprehension and production is likely to be beneficial for teaching idioms in the L2 classroom as well as for planning future curricula in Arabic language programs.

Although the current study explored VP idiomatic competence, future studies may want to focus on exploring idiom recall and retention in the e-book learning experience. Lontas (2002) recommended that researchers in the field of L2 should examine "metacognitive idioms learning strategies, including awareness and retention strategies" (p. 8). Highlighting the aspects of recall and retention can help language teachers provide optimal learning experiences that enhance cognitive processing, thereby helping them to store idiomatic expressions in their long-term memory. Furthermore, future studies may want to examine both idiomatic language and figurative language, in short, idiomatics, for as Lontas (2021) has already stated,

"Idiomatics encompasses idiomatic language accepted in common (in)formal usage and figurative language best exemplified in the oral and written texts the effective practice of such ideographic and pictographic language mechanisms creatively marks therein to

transmit cultural notion, sentiments, and meaning across time and space, and from one generation to the next” (p. 3).

Future researcher may consider conducting research that answers the following questions:

- What is the impact of using an interactive e-book on promoting idiomatic competence when learning other idiomatic expressions such as collocations and idioms?
- What are the effects of using an interactive e-book to promote recall and retention of VP idioms among L2 learners of the Arabic language?
- What difficulties do L2 learners of the Arabic language face when using interactive e-books to learn idiomatic expressions?
- What are the effects of various technological application such as WhatsApp, Facebook, Snapchat, Game-based learning, Augmented Reality (AR), Virtual Reality (VR), and Artificial Intelligent, on enhancing L2 learners’ idiomatic competence?
- How can technology be used to enhance L2 learners' motivation and learning of idioms, and what are the benefits and drawbacks of using different types of technology in this context?
- What teaching strategies are most effective for promoting L2 learners' motivation to learn idioms, and how do these strategies differ based on individual learner characteristics, such as proficiency level or language background?

In this study, the effectiveness of using an interactive e-book in promoting Arabic idiomatic competence was explored. The study found that the use of an interactive e-book had a positive effect on learners' idiomatic competence, but no statistically significant difference

was found in terms of motivation. The study highlights the importance of promoting L2 idiomatic competence, which remains a challenging task, and suggests that the use of an interactive e-book can be a useful tool in achieving this goal. The findings also indicate the need to consider learners' perspectives in designing and improving e-book learning environments. Overall, the study provides valuable insights into the potential benefits and challenges of using an interactive e-book to teach Arabic idiomatic expressions.

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APPENDIX A: ARABIC VP IDIOMS LIST

VP Arabic Idioms	Literal Meaning	Figurative Meaning
عاد بخفي حنين	He backed with the slippers of Hunain	He returned empty-handed
تجري الرياح بما لا تشتهي السفن	Winds go against what ships desire	You cannot always have what you want
ذر الرماد على العيون	put ash in the eyes	Deceitful opinion, act, action, and proposition
يطرق الحديد وهو ساخن	hit while the iron is hot	To go for the chance immediately
يخرج من عنق الزجاجة	to pass through the bottle neck	To pass situation with a lot of effort and difficulty.
يمسك العصا من المنتصف	To hold the stick from the middle	To be moderate in dealing with situation.
لا ناقة له فيها ولا جمل	I have no camel in this	I have nothing to do with this
كل إناء بما فيه ينضح	A vessel filters what it contains	Person will bring out what he/she stored up in heart
أكل الدهر عليه وشرب	The eternity eats and drink on him	Be Behind the time
يعرف من أين تؤكل الكتف يعرف	He/she knows where to eat the shoulder	He/she knows how to go about things

APPENDIX B: ARABIC VP IDIOMS ACHIEVEMENT TEST

قم بقراءة الحوار ثم اختر التعبير الاصطلاحي المناسب

Read the dialogue and choose the correct idioms based on the given context.

١	<p>-عندما قرر أحمد أن يفتتح متجره الخاص بالملابس الرياضية حاول أن يأخذ بنصائح صديقه علي، الذي يعتبر من أكبر تجار الملابس الرياضية في مدينة الرياض فهو ولذلك أصبح من أكبر تجار الرياض؟</p> <p>١- يعرف من أين تشرب الكتف ٢- يعرف من أين تؤكل الرقبة ٣- يعرف من أين تؤكل العظم ٤- يعرف من أين تؤكل الكتف</p>
٢	<p>استفاد أحمد من سنوات الخبرة التي قضاها في الإدارة، حيث تعلم ألا يكون قاسيا ولا مجاملا أمام الموظفين، وإنما عليه أن؟ لكي يكون عادلا مع الجميع.</p> <p>1- يمسك الخوذة من المنتصف 2- يمسك الإدارة من المنتصف 3- يمسك العصا من المنتصف 4- يمسك الجميع من المنتصف</p>
٣	<p>قامت الشرطة بالقبض على محمد بتهمة سرقة منزل، ولكنه أخبر الشرطة أنه كان في المستشفى أثناء عملية السرقة. ثم قامت الشرطة بمشاهدة كاميرا المنزل واتضح أن محمد ليس السارق. فعلا، استطاع محمد أن؟</p> <p>1- يخرج من عنق الحوت 2- يخرج من عنق الزجاجة 3- يخرج من عنق الدجاجة 4- يخرج من عنق الأزمة</p>
٤	<p>سعى أحمد لكي يحصل على مقعد في تخصص إدارة الأعمال في جامعة الملك سعود ولكن شروط القبول صعبة جدا، وبعد أسبوع وصل الخبر أن الجامعة فتحت القبول وألغت شروط القبول. عندها قرر أحمد أن ويبادر للتقديم مباشرة.</p> <p>1- يطرق الحديد وهو بارد 2- يطرق المسمار وهو ساخن 3- يطرق الحديد وهو متجمد 4- يطرق الحديد وهو ساخن</p>
٥	<p>بعد مضي ٧٠ سنة على شراء المنزل بدأ السقف بالتساقط. أدرك صاحب المنزل أن بيته قد ولذلك قرر بيعه في الحال وشراء منزل آخر.</p> <p>1- شرب الدهر عليه وأكل 2- أكل الدهر عليه وشرب 3- أكل الدهر عليه وصام 4- أكل الدهر عليه ونام</p>

٧	<p>خطط أحمد للسفر مع أصدقائه إلى دولة اليابان. وقيل موعد سفرهم، قامت دولة اليابان بمنع السفر والدخول والخروج من الدولة، نظرا لارتفاع الإصابات بمرض كورونا. حينها أيقن الأصدقاء أن خطة السفر لن تنجح وأن لذلك قاموا بإلغاء تذاكر السفر.</p> <p>1- الرياح تجري بما لا تشتهي المدن 2- الرياح تجري بما لا تشتهي الخطط 3- الرياح تجري بما لا تشتهي السفن 4- الرياح تجري بما لا يشتهي البحر</p>
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٨	<p>قام أهل القرية برفع شكوى على البلدية بسبب عدم توسعة الشارع الرئيسي في البلدة. ولكن البلدية أرسلت هدايا لكي تشكر أهالي القرية على صبرهم. حينها قام أهل القرية برفض هذه الهدايا، وعرفوا أن البلدية تحاول لكي يتنازلوا عن الشكوى، وينسوا مطالبهم.</p> <p>1- ذر التراب على العيون 2- ذر الرماد على الجفون 3- ذر الرماد على العيون 4- ذر العيون على الرماد</p>
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٩	<p>بعد أن خسر فيصل في مباراة كرة القدم، قام بالتلفظ بعبارات غير لائقة على حكم المباراة. ولكن حكم المباراة لم يتكلم، واكتفى بقول</p> <p>1- كل إناء بما فيه ينضح 2- كل إناء بما فيه ينصح 3- كل إناء بما فيه يفضح 4- كل إناء بما فيه يشطح</p>
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١٠	<p>حاول فيصل أن يقتنع خالد لكي يشارك في مسابقة الشعر السنوية. ولكن خالد أخبر فيصل قائلا: أن هذه المسابقة فأنا لست بشاعر.</p> <p>1- لا ناقة لي فيها ولا بقر 2- لا ناقة لي فيها ولا جمل 3- لا ناقة لي فيها ولا أرنب 4- لا جمل لي فيها ولا ناقة</p>
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<p>قم بقراءة الحوار ثم أكمل الفراغ في التعبيرات الاصطلاحية التالية Read the sentence and complete the idioms correctly.</p>	
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١١	أحمد ذكي جدا فهو يعرف من أين تؤكل لذلك أصبح من أكبر تجار مدينة الرياض.
١٢	شاهد محمد جاره يقوم بإلقاء القمامة في منتصف الشارع، لا شك أن محمد يعلم أن جاره لا يلتزم بآداب النظافة، فكل كل بما فيه
١٣	بعد أن سمع فيصل بالتنقيضات الكبيرة في متجر الملابس الرجالية، أخبر الجميع بأنه سيطرق الحديد وهو وسيبادر بشراء الملابس التي يريدها.

قام المجرم بالبكاء أمام القاضي لكي يعفو عنه، ولكن القاضي تجاهل ذلك، لمعرفته أن المجرم يحاول أن يذر الرماد على	١٤
قرر خالد أن يصبح تاجرا في مجال الأسهم البنكية، فقام ببيع سيارته والحصول على قرض بنكي، ولكنه وبعد شهر عاد طالبا من أبيه المساعدة لأنه خسر كل ما لديه، حزن الأب جدا لأن خالد عاد حنين.	١٥
خالد لا ناقة له ولا..... في سوق العملات الرقمية، ولذلك قرر البحث وسيلة أخرى لجني المال.	١٦
رفض فيصل أن يشتري سيارة صديقه لأنها قديمة جدا، وقال مازحا: هذه سيارة أكل الدهر عليها و.....	١٧
أراد محمد و فيصل للذهاب لتناول طعام العشاء في مطعمهم المفضل، وعندما وصلا إلى المطعم وجدوه مقفلا. قال محمد: هيا بنا نبحث عن مطعم آخر يا فيصل فالرياح تجري بما لا تشتهي	١٨
كان محمد واقفا أمام منزله عندما ارتطمت سيارة بجدار المنزل وتوجهت نحوه بسرعة شديدة. ولكن السيارة انحرفت إلى اتجاه آخر قبل أن تصطدم به. حينها أدرك محمد أنه خرج من عنق وقام بشكر الله وحمده.	١٩
يحب الجميع أسلوب المدير الجديد مع الموظفين. فهو يعاملهم باحترام وكذلك لا يفضل أحدا على آخر. لذلك كان المدير الجديد يمسك العصا من ولذلك أحبه الجميع.	٢٠

APPENDIX C: KELLER PERMISSION TO USE THE IMMS

Instructional Material Motivation survey IMMS

📎 1 ✓ 🗄



Alfaifi, Adel

Dear Dr.Keller, I hope this email finds you well. My name is Adel Alfai...

Wed 2021-01-27 08:15 PM



John Keller <jkellersan@gmail.com>

Thu 2021-01-28 11:01 AM

To: Alfaifi, Adel



Keller 2010 ARCS Measureme...

4 MB



Dear Adel,

Yes, you certainly can. Also, I am attaching a segment from my book that pertains to the instrument in case you don't already have it.

Best wishes for success!

John

John M. Keller, Ph.D.
Professor Emeritus
Educational Psychology and Learning Systems
Florida State University

9705 Waters Meet Drive
Tallahassee, FL 32312-3746
Phone: 850-294-3908

Official ARCS Model Website: <http://arcsmodel.com>.

Keller, J.M. (2010), *Motivational Design for Learning and Performance: The ARCS Model Approach*. New York: Springer. Now available in English, Japanese, Turkish, and Korean.

"Good judgment comes from experience, and a lot of that comes from bad judgment."

From "Don't Squat with Your Spurs On:
A Cowboy's Book of Wisdom."

APPENDIX D: SEMI-STRUCTURED INTERVIEW

Questions:

1. In what ways did the Interactive E-Book help you understand Arabic idiomatic expressions?
2. Did the interactive e-book multimedia features such as images, textual enhancement, and discussion help you to comprehend Arabic idioms? If yes, in what ways? If not, why not?
3. What multimedia features did you like the most, glossing, pictures, discussion, and why?
4. Describe your experience using e-book in learning Arabic idioms.
5. Did the Arabic context in the interactive e-book help you to recognize the idioms' meaning? If yes, in what ways? If not, why not?
6. What strategies did you apply when you faced an unknown VP idiom in e-book?
7. What technology-based application have you ever utilized to learn Arabic idioms?
8. Did the authentic context provided in the e-book help you understand Arabic idioms? If yes, in what ways? If not, why not?
9. Did the interactive e-book help you learn Arabic idioms and develop your communication skills? If yes, in what ways? If not, why not?
10. What are the advantages and disadvantages of learning Arabic idioms in the interactive e-book?
11. In learning Arabic idioms, do you prefer traditional paper-based books or interactive e-book? Why?
12. Did you experience difficulties using the e-book? If yes, please address those difficulties?
13. What recommendations that would you give to Arabic L2 learners in utilizing e-book in learning Arabic idioms.

APPENDIX E: STUDY APPROVAL FROM KING SAUD UNIVERSITY

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مكتب وكيل الجامعة
للدراسات العليا والبحث العلمي

Ref. No.: KSU-HE-21-411

Researcher. Adel Yazeed Alfaify

Subject: Research Project No. KSU-HE-21-411

Project Title: "The Effects of an Interactive E-Book on Promoting Idiomatic Competence and Motivation among L2 Learners of Arabic language in Saudi Arabia "

Dear Researcher: Alfaify

With reference to the approval of the institutional Review Board (Human and Social Researches), regarding the above mentioned subject, please be informed that the Institutional Review Board of King Saud University has confirmed the approval of your project .

We wish you the best of success with your research endeavors.

Sincerely yours,

Prof. Khalid Ibrahim Alhumaizi

**Vice Rector for Graduate Studies & Scientific Research
Chairman, Institutional Review Board (KSU)**



٤/٦٧/١٤٣١٦٧

١٤٤٣/٠٣/١٢

APPENDIX F: IRB APPROVAL



APPROVAL

January 19, 2022

Dear Adel Alfaifi:

On 1/12/2022, the IRB reviewed and approved the following protocol:

Application Type:	Initial Study
IRB ID:	STUDY003072
Review Type:	Expedited 6,7
Title:	The Effects of an Interactive E-Book on Promoting Idiomatic Competence and Motivation Among L2 Learners of Arabic language in Saudi Arabia
Funding:	None
IND, IDE, or HDE:	None
Approved Protocol and Consent(s)/Assent(s):	<ul style="list-style-type: none">• HRP-503a - Social-Behavioral Protocol Template_5.1.20_Chair Comments (1).docx• Verbal Consent .pdf• Online Consent, Version #3, January 8, 2022_IRB Edits Chair Comments (1).pdf <p>Approved study documents can be found under the 'Documents' tab in the main study workspace. Use the stamped consent found under the 'Last Finalized' column under the 'Documents' tab.</p>

Within 30 days of the anniversary date of study approval, confirm your research is ongoing by clicking Confirm Ongoing Research in BullsIRB, or if your research is complete, submit a study closure request in BullsIRB by clicking Create Modification/CR.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Your study qualifies for a waiver of the requirements for the documentation of informed consent for the online survey outlined in the federal regulations at 45 CFR 46.117(c).

Institutional Review Boards / Research Integrity & Compliance

Sincerely,