The Effects of Encoding Strategy Training on Foreign Language Learning

Olla Najah Al-Shalchi

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THE EFFECTS OF ENCODING STRATEGY TRAINING ON FOREIGN LANGUAGE LEARNING

by

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ABSTRACT

THE EFFECTS OF ENCODING STRATEGY TRAINING ON FOREIGN LANGUAGE LEARNING

Olla Najah Al-Shalchi
Old Dominion University, 2015
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Vocabulary of a language makes up approximately 75% of comprehension (Nagy & Scott), and researchers agree that learning vocabulary is more effective when learners are given strategies to learn the vocabulary (Cheng, 2011; Lee, Lim, & Grabowski, 2010; Liu, 2010; Teow, Ismail, & Kabilan, 2010). Research will allow instructional designers to determine what strategies work best for different groups of learners while taking into consideration the amount perceived workload to ensure that it is not too much or too little.

The purpose of this study was to compare the keyword and context strategies with learners enrolled in various undergraduate Arabic courses (Arabic 1, Arabic 2, and Arabic 3) to determine their impact on vocabulary learning and perceived workload during instruction. Three research questions guided this study: 1- Does the strategy (keyword vs context method) effect vocabulary learning in learners in various levels of Arabic (Arabic 1, Arabic 2, and Arabic 3) respectively?, 2- Does the strategy (keyword vs context method) effect perceived workload in learners in various levels of Arabic (Arabic 1, Arabic 2, and Arabic 3) respectively?, and 3-Does the strategy (keyword vs
context method) effect actual strategy use in learners in various levels of Arabic (Arabic 1, Arabic 2, and Arabic 3) respectively?

The results of the study show that no differences between the keyword and context groups existed in Arabic 1 learners but the context learners in Arabic 2 and 3 outperformed the keyword group when analyzing the results of their post-test scores. All groups of learners had the same downward linear tendency in regards to the perceived workload. Workload was highest on the first day of training and decreased over time. Finally, regarding the strategy usage, in Arabic 1 the keyword group reported higher usage on the cloze section of the test. No differences were found among the Arabic 2 participants, and in Arabic 3 the context group reported higher strategy usage on both sections of the post-test.

A discussion of the results, their implications, and suggestions for future research are presented.

*Keywords:* learning strategies, Arabic learners, keyword mnemonic, context strategy, perceived workload
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This thesis is dedicated to my second half, Mohammed Al-Saad. Without his love, support and encouragement none of this would have been possible.
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Thank you to my children Yunis, Kawthar (CoCo), Aya, and Cyrene. I began my doctoral journey when Yunis was only 3 months old and am ending it having Cyrene who is less than a year old. My children have brought me a tremendous amount of joy in life and have always made me laugh during some of the most difficult times.

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CHAPTER I

INTRODUCTION AND LITERATURE REVIEW

Introduction

Vocabulary learning is crucial in second language learning, and building vocabulary is one of the primary tasks that the foreign language learner will undertake (McCrostie, 2007; Richards, 1976). Approximately 70–80% of comprehension in foreign language occurs as a result of vocabulary learning (Nagy & Scott, 2006), and although vocabulary learning is an important process in language learning, it may be even more challenging for learners who must first learn a new writing system (Muljani, Koda, & Moates, 1998; Wang, 2003; Hamada & Koda, 2008), such as Arabic. Vocabulary building, critical to second language learner success, can be enhanced with instructional strategies that emphasize efficient vocabulary learning (Folse, 2007).

Instructional strategies are techniques used to promote learning by assisting the learner in processing (Oxford, 1990). Many researchers contend that instruction designed with appropriate instructional strategies is more effective (Cheng, 2011; Lee, Lim, & Grabowski, 2010; Liu, 2010; Teow, Ismail, & Kabilan, 2010). Instructional strategies help learners make new information meaningful by linking the new information to prior knowledge (Oxford, 1990). In order for an instructional strategy to be effective, the strategy must be included along with the material to be mastered (Merrill, Drake, Lacy, Pratt, & the ID2 Research Group, 1996) rather than presenting the material and the strategy independently. It is also important to direct the learner in using the prescribed strategy while limiting the use of several strategies all at once (Pressley & Woloshyn,
1995). This allows the learner to master select strategies while gaining benefit from that strategy in acquisition of the associated content.

Many different types of instructional strategies exist; among the most researched are encoding strategies (e.g., Delaney & Verkoeijen, 2009; Dunlosky & Hertzog, 2000; Gentner, Loewenstein, & Thompson, 2003; Sporer, 1991). Encoding strategies allow learners to create mental associations and connections with previous knowledge, which are more easily rehearsed and stored in long term memory facilitating more efficient retrieval when the information is needed (Pressley & Hilden, 2006).

The use of instructional strategies can have an impact on the perceived workload associated with the instruction. Instructional designers may be able to manipulate the way that information is presented to learners so that the amount of perceived workload that a learner exerts is neither over nor underwhelming (Beckmann, 2010). High perceived workload has been associated with lower test scores and low perceived workload with higher test scores (Pass, 1992; Paas & van Merrienboer, 1994). Theorists contend that when there is not enough workload, performance suffers because individuals find the task too easy and are bored yet when there is too much workload, performance suffers because the individual is overwhelmed by the complexity of the material or task (Kyndt, Dochy & Struyven, 2010). Therefore, workload needs to be balanced with the task to achieve maximum performance for the learner (Kyndt, Dochy & Struyven, 2011).

Two critical components for the design of instruction to be effective are incorporating effective instructional strategies with the material and being aware of different learner characteristics such as the learner’s prior knowledge (Morrison, Ross, & Kemp, 2007). Researchers have often stated the importance of vocabulary acquisition in a
foreign language, yet “there is a consensus on the lack of conceptualization of process and certain strategies that students develop for vocabulary learning” (Kocaman & Cumaoğlu, p. 294, 2014).

This study explored the effects of instructional strategy training on vocabulary learning and perceived workload in foreign language learning. Specifically, this study examined differences in perceived workload and the relationship between prior knowledge and vocabulary language learning, specifically in Arabic, using two different instructional strategies. Although prior research in foreign language learning has been done, very little research exists with specifically examining Arabic and this study aims to fill that gap.

**Literature Review**

**Instructional Strategies**

In a meta-analysis of over 50 research articles found that, in order for an instructional strategy to be effective, it must be used according to the learner’s capability, and that a learner must be trained in how to use the strategy (Hattie, Biggs, & Purdie, 1996). It is not enough to provide the learner with the information that needs to be learned—it is also important to guide the learner in how to process the information by providing training on how to use encoding strategies. Furthermore, just because a learner has used a strategy once in a given subject, he/she does not automatically transfer the strategy to another subject. Strategies used in one subject can be used in other areas, but this needs to be pointed out to the learner. In order for individuals to become lifelong learners, they realize they can apply strategies in different contexts (McKeachie, Pintrich, & Lin, 1985).
One recommendation from researchers is that when designing material, time should be devoted to the incorporation of instructional strategy training (Pressley & Woloshyn, 1995). Learners should be told when and why they are using a strategy, and use of the strategy should be modeled by the instructor or another learner who has mastered the use of the strategy. It is also best to teach one strategy at a time. At least one study has shown that it takes learners approximately ten hours to become proficient in using a strategy (Pressley & Wolosyhn, 1995). However, the amount of time may vary with the content being learned, prerequisite knowledge and skills of the learner, and the strategy being used. Ultimately, learners should acquire a variety of strategies because learning is a complex process, and not every strategy will meet the objective of the lesson (Chamot, 2006). It has also been reported that good learners use a variety of strategies (Folse, 2004). Finally, more research needs to be conducted to determine what strategies work best for different learners and different content while managing perceived workload to be exerted.

Naturally, because not every strategy will help a learner achieve the objective of the lesson, it can be argued that strategies used by novice learners will differ from the strategies used by more advanced learners (Hsiao & Oxford, 2002). Providing the experienced learner with detailed instructional guidance may hinder rather than help the learner since more experienced learners have already built their schema and must expend perceived workload dealing with redundant information (Kalyuga, Ayres, Chandler, & Sweller, 2003). However, novice learners benefit the most from using worked examples or process worksheets because they need extensive guidance, and that effect fades and deteriorates as the learner gains more schema in that domain (Kirschner, Sweller, &
Clark, 2006). For the purposes of this study, instructional strategy training was embedded in to foreign language instruction to examine the effects of different strategies on learners with differing prior knowledge.

**Instructional Strategies for Foreign Language Learning**

Various instructional strategies are available to aid learners in acquiring foreign language vocabulary. These strategies are variations of encoding instructional strategies as the goal is to facilitate rehearsal of word meanings to build language schema. Two common variations of strategies, are direct and indirect strategies. Direct vocabulary instructional strategies focus on the meaning and structure of the word (Bromley, 2007), and provide learners with high levels of detail. The main goal of this strategy is to encode the new information to memory. This task is done by having the learner memorize the word and then practice using it in various contexts.

Indirect vocabulary strategies provide the context in which the word occurs and allows the learner to understand the meaning of the word, and therefore vocabulary learning is incidental (Tozcu & Coady, 2004). This strategy provides the learner with a low level of detail. For example, a student may be provided with two or three sample sentences in which the vocabulary word is used and is highlighted so that the learner knows which word to focus on. The rest of the sentence should be clear to the learner so that he/she should be able to infer what the word means. The learner then defines the word.

Two of the most common vocabulary learning strategies include the *keyword mnemonic strategy*, a direct strategy, and the *context strategy*, an indirect strategy.
Effectiveness of Direct vs. Indirect Encoding Strategies

Both the keyword mnemonic and context strategies have been extensively researched in different disciplines, and both have been shown to be effective (e.g., Atkinson & Raugh, 1975; Hulstijn, 1992; McDaniel & And, 1987; Pressley, Levin, Hall, Miller, & Berry, 1980). Most of the research that has focused on these vocabulary strategies tested the effects of a particular strategy and the retention of the vocabulary (Gu & Johnson, 1996). However, very little research exists in which the two strategies were compared to determine if one is more effective than the other. In the research that does exist, the two strategies were equally effective over time (McDaniel, Pressley, & Dunay, 1987), and when used together, they produced the best results in foreign language learning (Rodriguez & Sadoski, 2000). Furthermore, no research has been done to determine if the learner’s proficiency level correlates with the most effective strategy to use nor was there research done looking specifically at Arabic as a foreign language.

The Keyword Mnemonic strategy. One of the common strategies in direct vocabulary instruction is the keyword mnemonic strategy. This strategy involves three steps, which are often referred to as the three R’s (relating, recoding, and retrieving). First, the keyword in the native language should sound similar to the foreign language word that needs to be learned. Next, there needs to be an image that depicts an interaction of the keyword and the meaning of the foreign language word. Last, when the learner is given the foreign language word, he/she needs to remember the association and the image to correctly define the word (Mastropieri, Scruggs, & Levin, 1986). The importance of resemblance between the keyword and the foreign language word is essential for this strategy (Shaughnessy, 2003). Research has shown this strategy increases the vocabulary
learning of foreign language learners (e.g., Atkinson, Raugh, & Stanford University 1974; El Sawy, 2002; Hall, 1988; Raugh & Atkinson, 1974; Sagarra & Alba, 2006; van Hell & Mahn, 1997).

The keyword mnemonic strategy first began to receive attention after Atkinson and Raugh published an article in 1975 in which they were able to document how using the strategy helped learners acquire Russian vocabulary (Levin, 1993). As Reed (2006) explains, Russian was chosen as the foreign language in the study because Russian vocabulary does not sound similar to English vocabulary, thus presenting an added challenge. In the study the participants had three days to learn 120 Russian words, and two groups were compared. One group was specifically instructed to use the keyword mnemonic strategy to learn the vocabulary while the second group was instructed to use any strategy that they liked. The group that used the keyword mnemonic strategy was able to recall nearly three-fourths of the words when compared to the second group that recalled approximately one-third of the words.

When researchers tried to use the keyword mnemonic strategy in a German language class, they were able to go one step beyond having the learners learn the definitions of German words by having the participants learn the gender (i.e. masculine, feminine, or neutral) of the words Desrochers, Gelinas, & Wielandet, 1989). This same idea was replicated in a second study (Desrochers, Wieland, & Cote, 1991). In both studies, the learners who were given instruction in using the keyword mnemonic strategy with the addition the gender of the noun in the image link had better recall of vocabulary. Furthermore, researchers found that in order for the participants to correctly determine the gender of the noun, they must have been
able to correctly retrieve the image and definition of the word. If the participant was unable to retrieve the meaning, then identification of the gender of the noun was merely a guess.

A study conducted in Spain provided evidence that the keyword mnemonic strategy may best be used with learning foreign language words that have high image vividness (Campos, Amor, & Gonzalez, 2004). The authors reported that studies investigating this strategy have had mixed results, with some studies concluding that high image words are better learned by using mnemonics and other studies concluding that mnemonics outperforms other learning techniques. Mastropieri and Scruggs (1989) have recommended that low-image or abstract words can be symbolically linked to a picture to overcome this obstacle. For example, the word love may be linked to a heart and a picture of a heart that would symbolize love, and this would help learners with abstract words.

The keyword mnemonic strategy has been used in several instances and under different circumstances with positive results. While the keyword mnemonic strategy is a direct strategy that a learner follows step by step, the context strategy forces the learner to use their background knowledge in the subject and build upon their expertise. The question is whether this strategy will work with students that have established schema in the language they are learning or if the detailed guidance will interfere with their learning.

**Context strategy.** The context strategy is an indirect strategy used in vocabulary instruction. This strategy requires the use of the vocabulary word in multiple sentences. Using this strategy assumes the learner should be able to decipher the meaning of the word based on the sample sentences (Greenwood, 2002). Teachers
may provide the learner with a short paragraph in which the unknown word is highlighted each time it is used followed by a question in which the learner must correctly identify or state the definition of that word. The context strategy prompts learners to look for cues that will allow them to come up with the correct meaning of the word. These cues can include synonyms, antonyms, paraphrasing, prefixes, and suffixes (Nash & Snowling, 2006). It is argued that this indirect strategy helps learners become independent learners (Decarrico, 2001) because they are not being specifically told what the words mean and are deciphering the meaning on their own.

The context strategy has been praised because many of the words that learners may come across are low frequency, and teaching learners how to deal with these types of words is a better strategy than requiring learners to memorize lists of words that they may rarely need to use or encounter (Redouane, 2010). When using the context strategy, not only do learners learn the meaning of the word, but also, they are able to recall the syntax, pragmatics, and emotion associated with the meaning of the word (Gu & Johnson, 1996). However, because learners may incorrectly infer the meaning of words, the strategy may not be very practical for learners who are at a beginning level. A positive correlation has been demonstrated between the amount of vocabulary that a learner knows and the effective use of context strategy (Redouane, 2010). Therefore, this strategy may not be appropriate to use with novice language learners.

Research has been done in which the effectiveness of the context strategy is tested. Hulstijn (1992) conducted a total of five experiments. In each experiment the participants were required to read a text and then answer comprehension questions
based on the text. In three of the experiments, the participants were non-native Dutch learners, and in the remaining two experiments, the participants were native Dutch speakers. Hulstijn was interested in investigating the retention of inferred unknown words when using a translation strategy, multiple choice strategy, a concise context strategy, or no cue provision. The participants who used the context strategy were more likely to remember the meaning of words when they inferred the meaning from context rather than being provided directly with the definition. The participants in the control group scored highest on their post-tests because they used more perceived workload in determining the meaning of the unknown word than all the other groups.

A Comparison of the Keyword Mnemonic and Context Strategies

The keyword mnemonic and context strategy represent two different instructional strategies used for foreign language learning. The design and use of these strategies can serve different purposes for different audiences. At present, there is little information comparing and contrasting the effects of each of these strategies on students, especially those with different levels of prior knowledge.

In one of the studies in which the two strategies were compared, the keyword mnemonic strategy was compared to the context strategy to find out if it would produce the same effect (McDaniel, Pressley & Dunay, 1987). To test the effectiveness of these two strategies, 22 participants were randomly selected to learn 30 nonsense English-based words using the keyword mnemonic strategy, and 20 participants were randomly selected to learn the same words using the context strategy. The participants using the context strategy were given a short paragraph of three sentences in which the definition could be inferred. It was found that when the
two strategies were compared with each other, they were both equally effective after a 1-week delayed post-test, but when the participants were tested shortly after learning the new words, the group that received the keyword mnemonic strategy outperformed the context strategy group.

In another study, the participants were students who had studied English as a second language for at least two years (Rodriguez & Sadoski, 2000). The purpose of the study was to test four strategies for learning English and to determine the effectiveness of the four strategies. The learners were randomly assigned to use one type of strategy: the keyword mnemonic strategy, the context strategy, rote rehearsal, or context/keyword mnemonic. The participants who received the context/keyword mnemonic strategy outperformed the other participants when tested in a delayed post-test. This suggests that using a combination of the keyword mnemonic strategy and the context strategy may lead to longer retention rates.

Rodriguez and Sadoski (2000) also note that their findings and implications can provide foreign language teachers with vocabulary building tools, and although the keyword mnemonic strategy seems to have been the best of the four techniques used, the learners themselves had been learning a foreign language for years. The participants were not asked to report about the techniques used, so it is possible that learners had a system of their own that they were accustomed to using and continued to do so. Despite the possible confounding variable, the researchers are certain that using the keyword mnemonic strategy to teach foreign language vocabulary is an area that needs to be further studied and can easily become one of the techniques that teachers use in vocabulary learning (Rodriguez & Sadoski, 2000).
Only two studies dealt with some type of comparison of the keyword mnemonic and the context strategies that are of interest. One study compared four different strategies and is difficult generalize to a broader audience. Also, in many of the studies, participants are introduced to a strategy for only a very limited time before being tested, not allowing the learner enough time to have practiced using the strategy (Abd Ghani and Zulkiply, 2008). The results of such studies may not show the true impact of using the strategy since learners have not been exposed to the strategy for longer periods, which this study will aim to do.

**Workload with Learners of Various Backgrounds**

Learners should acquire a variety of strategies because learning is a complex process, and not every strategy will meet the objective of the lesson (Chamot, 2006). Instructional designers need to determine through research what strategies work best for different groups of learners while taking into consideration the amount perceived workload to ensure that it is not too much or too little.

Naturally, because not every strategy will help a learner achieve the objective of the lesson, it can be argued that strategies used by novice learners will differ from the strategies used by more advanced learners (Hsiao & Oxford, 2002). The extent to which someone is familiar with a particular subject will affect how quickly information can be stored and processed. The brain has an unlimited capacity to store information, but when dealing with a new topic, the working memory is limited in how much information can be processed. Yet, even with this limitation, information that is stored in long-term memory helps restructure the new information to reduce the workload (Kalyuga, 2007). Another
way to reduce workload is by practice, and through practice, the information will come automatically (Cooper & Sweller, 1987).

Kalyuga (2007) states that the design of most instructional material is aimed at novice learners and does not take into account the fact that learners of different levels of expertise will be using the same material. Because instances of the expertise reversal effect have shown that novice learners need to use different strategies than those who are increasing their level of expertise, instructional designers need to use different strategies with learners of different backgrounds. Novice learners require much more detailed instruction and support to help build the new knowledge structures, while learners with background knowledge already have built the knowledge structures, or schema, and too many details such as detailed mnemonics instruction can slow them down and hinder them (Kalyuga, 2007). Learners with background knowledge in the domain may feel bored with the task if too much detail is given to them and if the perceived workload is too little which will cause poor performance.

In one study, researchers used a computer-based environment to teach circuit analysis techniques to determine if they could find support for the expertise reversal effect. The participants were categorized as being either low or high knowledge based on their prior experience. They were randomly selected to receive one of three treatments. The first group had a worked example and then a practice problem. The second group was given a practice problem followed by a worked example, and the third group was given a fading instructional process. With the fading instructional process, learners are presented with a worked example, and then with each additional example, the final step is omitted and the learner has to solve the final step. With each example an additional step
is omitted. All the groups covered the same material, and the results showed that the learners who had low prior knowledge gained more from using the worked example followed by a practice technique. The learners with high prior knowledge benefited more from using the practice problem followed by the worked example (Reisslein, Atkinson, Seeling, & Reisslein, 2006).

The issue then becomes how to go about accounting for workload because both workload and the usage of the strategy will lead to efficiency for the purpose of this study. To assume that workload is only one feature is incorrect. Workload in fact contains many qualities and characteristics. To only ask subjects to rate their perceived workload is insufficient, but instead researchers need to find out more about what attributes to the perceived workload. The NASA-TLX created a measurement tool to accurately measure the perceived workload of individuals imposed by tasks. The result took researchers three years to complete over 16 different experiments. The research done by NASA aimed to find out what factors contributed or did not contribute to workload, and they were able to develop a multi-dimensional rating scale focusing on six factors (i.e. mental demand, physical demand, temporal demand, performance, effort, and frustration) that may be related to the perceived workload of an individual completing a task. The NASA-TLX scale is an easy to use instrument that does not require a lot of time to complete (approximately 1-2 minutes) and a modified version were used in this study (Hart & Staveland, 1988).

**Purpose of the Research**

The purpose of this study was to compare the keyword and context strategies with learners enrolled in various undergraduate Arabic courses (Arabic 1, Arabic 2, and
Arabic 3) to determine their impact on vocabulary learning and perceived workload during instruction.

Research is needed to determine which strategies work best for various groups of learners during vocabulary learning in the foreign language classroom. Will a highly interactive, direct strategy require too much extraneous perceived workload through redundant information from learners with prior knowledge? Will an indirect approach provide too little guidance for novices and hinder their learning? The present study compared the effectiveness of two strategies—the keyword strategy and the context strategy—in the hope of adding to the research that has been done in this area and also to bring in a new perspective in determining whether the proficiency level of the language learner plays a role in the effectiveness of a strategy by examining the differences in perceived workload.

**Research Questions**

This study was guided by three main research questions.

1- Does the strategy (keyword vs context method) effect vocabulary learning in learners in various levels of Arabic (Arabic 1, Arabic 2, and Arabic 3) respectively?

2- Does the strategy (keyword vs context method) effect perceived workload in learners in various levels of Arabic (Arabic 1, Arabic 2, and Arabic 3) respectively?

3- Does the strategy (keyword vs context method) effect actual strategy use in learners in various levels of Arabic (Arabic 1, Arabic 2, and Arabic 3) respectively?
CHAPTER II

METHODS

Design

This study employed a quantitative, experimental research design. The independent variable is the strategy (keyword vs context method). Dependent variables were the post-test performance scores, the perceived workload, and the frequency of strategy used during post-testing.

Participants

This study was conducted with undergraduate students enrolled in Arabic courses at three institutions that are members of a language consortium of five universities located in the northeastern United States. The universities are located within close proximity to each other and students have the option of taking classes at any of the universities within the consortium. A total of 9 courses from three institutions were used to recruit participants. Each of the two institutions has one section of Arabic 1, Arabic 2, and Arabic 3. Each class section had an enrollment capacity of 20 students, but only students who completed all training sessions, completed both the pre-test and post-test, filled out the modified NASA TLX after each training session and received at least an overall 80% participation grade were used as participants for this study. The participants who completed all elements of the study were entered into a drawing for a $50 gift card. One gift card for each class section (i.e. 9 in total) were given away as an incentive. Participants were provided with an information sheet explaining the purpose of the study (Appendix A). Any student who did not wish to participate in the study was able to opt
out and was not be penalized. Their participation or nonparticipation was not be reported to their instructor. All classes were conducted in a face-to-face format.

Typically, Arabic 1 students have very little to no background knowledge of the language, and start with learning the Arabic alphabet. No placement exam is given to these students enrolled in Arabic 1. Student placement into the Arabic 2 or Arabic 3 is done by a placement exam. The placement exam was developed by the Arabic Lecturers who teach in the institutions on a regular basis to align with the American Council on the Teaching of Foreign Languages (ACTFL) guidelines and is used to determine the student’s current level of language proficiency for appropriate course placement. The exam consists of 25 multiple choice questions in reading, listening, grammar, as well as an oral exam and a writing section. The exam is administered the week prior to classes beginning in the fall semester. The main purpose of the exam is to ensure that all of the students within the consortium are at the same level in an Arabic class because many students have taken classes at other institutions and/or spent time living abroad in the Middle East where Arabic was the primary language used. In the first semester of Arabic 1 within the consortium, the students use the textbook *Alif Baa: Introduction to Arabic Letters and Sounds* (Brustad, Al-Batal, & Al-Tonsi, 2010) and also complete the first five chapters of *Al-Kitaab fii Ta'alum al-'Arabiyya with DVDs, Part 1* (Brustad, Al-Batal, & Al-Tonsi, 2011). During the first semester of the Arabic 2 class, students study Chapters 1-4 of *Al-Kitaab fii Ta'alum al-'Arabiyya with DVDs, Part 2*. In the Arabic 3 class, students use the third part of the textbook series and complete Chapters 1–3. A student must successfully pass lower-level course by completing quizzes, tests, writing and speaking assessments, and a final exam before moving to the next class.
Treatments

All participants within each class were randomly assigned to use either the keyword strategy or the context strategy and were provided with the training during 5 consecutive class sessions. A total of 116 participants were used in this study. In Arabic 1, there were 42 participants. In Arabic 2, there were 36 participants, and in Arabic 3, there were 38 participants. Half of the participants received the keyword treatment and the other half received the context strategy treatment. The study treatments were part of the normal class sessions, and were an in class activity that was done at the beginning of each class period for approximately 15 minutes for five consecutive class periods. For the remainder of the class period participants continued with their normal classroom activities that included listening, reading, grammar, and/or speaking activities.

The instructional treatments consisted of supplemental training on either the keyword or context strategy. This material included an explanation of the strategy with 2 examples. Then 9 vocabulary words were presented to the participant using the strategy, and then the participant was given the task of creating 9 more of their own examples. Each participant was given training material (see Appendices C-E) in which the strategy was explained and examples of how to use the strategy were provided. A copy of each training packet can be found in Appendices C-E. Each training packet was printed out on paper and the instructor of each class randomly distributed the training packets to the participants at the beginning of the first training session. The participants were asked to write their name on the training packet because they were collected and redistributed in the following four class periods. Half of the participants in each section received keyword training material and the other half received context strategy material.
Completing the training packet was a part of their normal class routine during the duration of the study. To ensure that participants were working on their training material, they were awarded a participation grade (Appendix F). The instructors used a rating scale (Figure 1) to rate the participation for the five class periods. At the end of the 5 days, the participation grades were averaged and only those who scored 4 or higher (80%) overall were used.

Day 1

<table>
<thead>
<tr>
<th>Participation Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>No Participation</td>
</tr>
</tbody>
</table>

*Figure 1. Participation Scale*

The instructors of the classes monitored the learners to ensure that they completed the packets and to ensure that the learners correctly understood how to use the assigned strategy. Along with the participation scale, an explanation of what each numerical number meant was included for the instructors (see Appendix F).

Participants using the keyword strategy were provided with an explanation and two examples to become familiar with the strategy. The explanation and the examples were the same for each level, but the vocabulary words that each level learned differed. Figure 2 provides an example of this strategy.
You are learning about different types of fruits, and one of the words that you need to learn is موز (moz), the Arabic for banana. This word sounds similar to Moses. Now, picture Moses dressed in a banana costume.

*Figure 2.* Example of the keyword strategy.

Each day, for five consecutive class periods, the participants were given their packets to review the strategy, review the examples provided and work on creating their own mnemonics to learn vocabulary. They were asked to spend 15 minutes per class period using the strategy to complete their training packets. Because time is being controlled, it will not be analyzed unless significant differences are found. The participants were given vocabulary words and asked to think of a word in their native language that sounds similar to the given word. Then participants then needed to draw an image in the space provided which includes the meaning of the word and the word from their native language. Every time the foreign language word is said or read, the participant was asked to think of that image to help recall the meaning.

The training packet for the context strategy treatment included an explanation and two examples of the strategy. Each day, for five days, the participants were given their packets to review the strategy and work on creating their own context to learn vocabulary.
for 15 minutes. A participant was provided with three sample sentences in which the vocabulary word is used. Based on the context of the sentences, the participant wrote their own definition of the word in the space provided.

The researcher worked with two subject matter experts (SMEs) to design the training packets (Appendices C-E) to ensure that the vocabulary chosen was appropriate for each level and with an artist to have appropriate pictures drawn for the groups receiving the keyword method treatment. All the training packets were collected each class period and reviewed by the instructor of the class to ensure its accuracy. The training packets were redistributed in the following days and at the end of the five-day training period, the researcher reviewed each packet to review the quality of the work that the participants had done.

Measurement of Dependent Variables

Perceived Workload. At the end of the 15 minutes each class period, the instructor passed out the self-reporting scales (Appendix G) so that the participants would rate their perceived workload. The participants were asked to rate their perceived workload only for that training session.

A modified self-reporting scale was adopted from NASA-TLX (Hart & Staveland, 1988) and was used for the participants to report their perceived workload. The participants were asked to rate each of the six factors (i.e. mental demand, temporal demand, performance, effort, and frustration) that may contribute to workload (see Appendix G). The scale allowed participants to mark from very low to very high on all the factors that contribute to perceived workload. The researcher then assigned numerical
values from 0-100 for each of those scales. An average score from all of the factors was calculated to give an overall workload score for each training session. Participants were not asked to rate physical demand because the training did not include any type of psychomotor skills.

**Arabic Vocabulary Learning.** All of the participants took a pre-test/post-test (Appendix H-J) consisting of 14 questions. The tests did not count towards the participants’ grade in the class. The researcher designed all the pre-test/post-tests and had them reviewed by SMEs to ensure that they were appropriate for the different levels. The test format was identical for all levels and consists of a matching section and a cloze section, with seven questions in each section. These two sections were chosen to be able to test whether the groups receiving the keyword method would perform better on the matching section and if the context method groups would perform better on the cloze section. Because different levels of Arabic (beginning, intermediate and advanced) are being tested, the vocabulary used in each test differed.

**Pre-test/Post-test.** The learners were given a pre-test to determine their knowledge of the vocabulary of the language before being given any treatment. The pre-test was used to ensure that the participants had not learned the vocabulary that was going to be presented in the training materials. Any participant that scored a 35% or higher on the pre-test (i.e. at least 5 out of the 14 questions) was not used for this study. Each correct response provided by the participant was awarded 1 point, and a total of 14 points was possible.

After spending five class periods using the assigned instructional strategy, all the participants were given a post-test, which was identical to the pre-test (see Appendices H-
J). The scoring of the post-test was the same as for the pre-test; the participants were awarded 1 point for each correct response, with a total of 14 points possible. The dependent variable was measured by the result of the post-test.

**Frequency of Strategy Use.** After completion of each section on the post-test, participants reported how often they used the strategy they trained with during testing on that one section. They were asked to report using the strategy on most of the questions, some of the questions, or none of the questions. These questions were embedded in the test and Figure 3 shows how the question appeared.

<table>
<thead>
<tr>
<th>All of the Time</th>
<th>Some of the Time</th>
<th>Half of the time</th>
<th>Less than half of the time</th>
<th>None of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>For the first section on the test (fill in the blank), how often did you use the strategy you had training in?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Figure 3. Example of frequency of strategy use.*
Study Procedures

An experimental quantitative methods research design approach was proposed for this study to examine the above-described research questions. In all courses, the participants use a textbook in which the vocabulary is presented as a list with the Arabic word and the English equivalent. In order to select the vocabulary to be used in the study, one chapter from the textbook for each class was randomly selected. Then 9 of the words from the chapter were also randomly selected to be presented to the participants by using either the keyword method or the context method. Another 9 vocabulary words were selected to allow the participant to create their own mnemonic or context. The researcher, along with two SMEs, designed the training material that was presented to the participants, and all of the training material was piloted prior to implementation. Ten volunteers from each Arabic 1, Arabic 2, and Arabic 3 were given the training materials to use as well as to calculate the approximate time required to complete the training.

The researcher met with all of the instructors who agreed to help carry out the research and collect data prior to the participants receiving any information. The researcher explained each strategy, provided the instructors with directions, a timer, copies of packets of the training material to be distributed to the participants, copies of the pre-test and post-test, and copies of the self-reporting scale. The instructors were also given a sheet for each participant to mark his/her participation during the training session.

Three sections each of the Arabic 1, Arabic 2, and Arabic 3 classes were used. Before the participants were given any information about the strategy, they had 15 minutes to complete the pre-test during their regular class session. The participants also completed a brief survey in which their demographics as well as their history in learning
languages was collected (Appendix B). The participants were given the information sheets about this study at that time.

In the following class period, each participant was be randomly assigned to either the keyword strategy or the context strategy. The packets of the training material were randomly distributed to the participants, and in each packet, the training on how to use the assigned strategy to learn the vocabulary for the chapter was detailed.

The instructors were provided with the packets to distribute to the participants upon their arrival in class. After all the packets were distributed, the instructors informed the class that their participation would be noted and graded during the next 15 minutes while working on the training. The instructors used the timers provided to help keep track of time and ensure that 15 minutes was used for the training session. Half of the packets instructed the participants on how to use the keyword method, and the other half provided instruction on the context method. The participants read the information in the packets silently and then examined the examples provided. Then the participants had time to create their own examples. A total of 15 minutes was given to the participants to read the material and create their own examples. At the end of the 15 minutes, the instructors passed out the modified NASA-T LX survey and participants were asked to rate the amount of perceived workload that was exerted. The packets were collected by the instructors at the end of the training session.

For the next four class periods, at the beginning of each class, the instructor returned the packets to the participants. The instructors set the timer for the first 15 minutes of class, and during that time, the participants were instructed to review the strategy and examples provided and work on creating their own examples with the words
provided. Again, the instructors awarded participation grades and monitored the work of the learners. Immediately after the 15 minutes, each day the participants were asked to rate the amount of perceived workload that was exerted. The perceived workload was measured 5 times and an average of the workload was calculated and analyzed.

All the participants took the post-test during the seventh class period. The participants had 15 minutes to complete the test, and answer two questions to rate how often they used the strategy to help answer the questions on the test.

**Data Analysis**

The data collection for this study consisted of the results of the post-tests, the ratings of perceived workload, and the self-reported usage of the strategy during post-testing. SPSS software was used for the statistical analysis.

**Research Question 1**

A one-way ANOVA was an appropriate analysis method for the purpose of the first research question, which compared the means of two groups that have one independent variable (Jones, 2012; Park, 2009). Three separate one-way ANOVA tests were calculated to determine if the strategy will effect vocabulary learning at each level (i.e., Arabic 1, Arabic 2, and Arabic 3) respectively. This allowed the researcher to determine if one of the strategies (i.e., keyword or context) is more effective in vocabulary learning for a given level.

**Research Question 2**

A two-way, within subjects ANOVA, or a 2x5 fixed factor design was an appropriate analysis method for the second research question, which is used when the
same measure is repeated over a period of time (Wiersma & Jurs, 2009). Three separate two-way within subjects ANOVA tests were calculated to determine if the strategy had an effect on perceived workload in learners at each level (i.e., Arabic 1, Arabic 2, and Arabic 3) respectively over the five days of training. This allowed the researcher to determine if one of the strategies (i.e., keyword or context) is more predictive of perceived workload for a given level.

**Research Question 3**

A two-way ANOVA was an appropriate analysis method for the third research question, which compared the means of two groups that have one independent variable (Jones, 2012; Park, 2009). Three separate one-way ANOVA tests were calculated to determine if the strategy will affect the frequency of strategy use at each level (i.e., Arabic 1, Arabic 2, and Arabic 3) respectively. This allowed the researcher to determine if one of the strategies (i.e., keyword or context) was more predictive of frequency of strategy use.

Table 1 provides a summary of the research questions, the independent and dependent variables, data, and analysis procedures.
Table 1

Data Related to Research Questions

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Independent Variable</th>
<th>Dependent Variable</th>
<th>Data</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Does the strategy (keyword vs context method) effect vocabulary learning in learners in various levels of Arabic (Arabic 1, Arabic 2, and Arabic 3) respectively?</td>
<td>Strategy (keyword or Context method)</td>
<td>vocabulary learning</td>
<td>Post-test – score</td>
<td>Three independent one-way ANOVA tests were calculated to determine if strategy (keyword vs context method) would affect vocabulary learning at each level (Arabic 1, Arabic 2, and Arabic 3) respectively.</td>
</tr>
<tr>
<td>2- Does the strategy (keyword vs context method) effect perceived workload in learners in various levels of Arabic (Arabic 1, Arabic 2, and Arabic 3) respectively?</td>
<td>Strategy (keyword or Context)</td>
<td>perceived workload</td>
<td>Average perceived workload from the modified TLX scale</td>
<td>Three independent two-way within subjects ANOVA tests were calculated to determine if strategy would affect perceived workload at each level (Arabic 1, Arabic 2, and Arabic 3) respectively.</td>
</tr>
<tr>
<td>3-Does the strategy (keyword vs context method) effect the actual strategy use in learners in various levels of Arabic (Arabic 1, Arabic 2, and Arabic 3) respectively?</td>
<td>Strategy (keyword or Context)</td>
<td>use of strategy</td>
<td>Self-report of strategy use</td>
<td>Three independent one-way ANOVA tests were calculated to determine if strategy (keyword vs context method) would affect frequency of strategy use at each level (Arabic 1, Arabic 2, and Arabic 3) respectively.</td>
</tr>
</tbody>
</table>
CHAPTER III
RESULTS

This study sought to answer three research questions. Quantitative results for each question are presented in this chapter.

Research Question 1

The first research question asked if the strategy (keyword vs. context) would affect vocabulary learning for learners in various levels of Arabic (Arabic 1, Arabic 2, and Arabic 3). Three separate one-way ANOVA tests compared learning outcomes for the keyword and context strategies for each level of Arabic as measured by post-test.

When examining the results of the Arabic 1 learners, there was no significant effect of the independent variable, strategy (keyword vs. context), on the dependent variable (vocabulary learning) at the $p = .05$ level $F(1, 41) = .41, p = .53, \eta_{p}^2 = .01$. The mean score for the keyword group was 13.05 and for the context group 12.81.

When examining the results of the Arabic 2 learners, there was a significant effect of the independent variable, strategy (keyword vs. context), on the dependent variable (vocabulary learning) at the $p = .05$ level $F(1, 35) = 15.80, p = .000, \eta_{p}^2 = .32$. The mean score for the keyword group was 11.33 and for the context group 7.88.

When examining the results of the Arabic 3 learners, there was a significant effect of the independent variable, strategy (keyword vs. context), on the dependent variable (vocabulary learning) at the $p = .05$ level $F(1, 37) = 34.64, p = .000, \eta_{p}^2 = .48$. The mean score for the keyword group was 6.8 and for the context group 12.45. Figure 4 shows the overall mean scores for the keyword and context group in each level.
Research Question 2

The second research question aimed to determine whether the strategy (keyword vs. context method) would affect perceived workload for learners in various levels of Arabic (Arabic 1, Arabic 2, and Arabic 3). Participants were given a modified NASA-TLX scale after each of the five training days. The modified NASA-TLX scale required participants to rate six factors (mental demand, temporal demand, performance, effort, and frustration). Each factor was scored 0-100 and then an overall average based on those scores was used to have a score of workload for each day. To determine the effect of strategy on perceived workload, three separate two-way, within-subjects ANOVA or a 2 x 5 fixed-factor were calculated.

For Arabic 1, data were analyzed using a mixed-design ANOVA with a within-subjects factor of days (1-5) and a between-subjects factor of strategy (keyword vs. context).
context). Mauchly’s test indicated that the assumption of sphericity had been violated ($\chi^2(9) = 59.19, p < .001$); therefore, degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\varepsilon = 0.56$). Main effects of subscale, $F(2.25, 90.08) = 66.51, p < .001$, $\eta^2_p = .62$, and strategy, $F(2.25, 90.08) = .37, p > .001$, $\eta^2_p = .72$, were qualified by an interaction between days and strategy, $F(2.25, 90.08) = 66.51, p < .001$, $\eta^2_p = .62$.

Figure 4 illustrates a downward linear trend for both strategies across the five days with the keyword strategy having higher perceived workload than the context strategy group each day.

![Figure 4. Workload for Arabic 1.](image)

For Arabic 2, data were analyzed using a mixed-design ANOVA with a within-subjects factor of days (1-5) and a between-subjects factor of strategy (keyword vs. context). Mauchly’s test indicated that the assumption of sphericity had been violated ($\chi^2(9) = 63.207, p < .001$); therefore degrees of freedom were corrected using
Greenhouse-Geisser estimates of sphericity ($\varepsilon = 0.480$). Main effects of subscale, $F(1.92, 65.29) = 101.30, p < .001, \eta_p^2 = .75$, and strategy, $F(1.92, 65.29) = .65, p > .001, \eta_p^2 = .52$, were qualified by an interaction between days and strategy, $F(1.92, 65.29) = 101.30, p < .001, \eta_p^2 = .75$.

Figure 5 shows a downward linear trend for perceived workload across the five days for both the keyword and context strategies for Arabic 2 participants.

Figure 5. Workload for Arabic 2.

For Arabic 3, data were analyzed using a mixed-design ANOVA with a within-subjects factor of days (1-5) and a between-subjects factor of strategy (keyword vs. context). Mauchly’s test indicated that the assumption of sphericity had been violated ($\chi^2(9) = 66.30, p < .001$); therefore degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\varepsilon = 0.48$). Main effects of subscale, $F(1.9, 68.39) = 131.81, p < .001, \eta_p^2 = .79$, and strategy, $F(1.9, 68.39) = 2.54, p > .001, \eta_p^2 = .09$, were qualified by an interaction between days and strategy, $F(1.9, 68.39) = 131.81, p < .001, \eta_p^2 = .79$. 
Figure 6 shows a downward linear trend for perceived workload across the five days for both the keyword and context strategies for Arabic 3 participants.

To determine if there were any significant differences for each day, five separate one-way ANOVA tests were calculated for each level for each day. In order to control for the familywise type I error rate a $p=0.01$ was used. The following three tables show the means and standard deviations for each day for each group for Arabic 1, Arabic 2, and Arabic 3. The only significant findings found were in Arabic 3 learners on Days 4 and 5. For day 4, a significant effect of the independent variable, strategy (keyword vs. context), on the dependent variable (day) at the $p = .01$ level, $F(1, 36) = 14.18$, $p = .001$, $\eta^2_p = .28$ was found. The mean score for the keyword group was 25.05 and for the context group 37.21. For day 5, a significant effect of the independent variable, strategy (keyword vs. context), on the dependent variable (day) at the $p = .01$ level, $F(1, 36) =$
10.96, $p = .002, \eta_p^2 = .23$ was found. The mean score for the keyword group was 16.16 and for the context group 26.32.

### Table 2

*Means and standard deviations for each day for Arabic 1*

<table>
<thead>
<tr>
<th>Day</th>
<th>$n$</th>
<th>$M$</th>
<th>SD</th>
<th>$n$</th>
<th>$M$</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>21</td>
<td>54.81</td>
<td>17.47</td>
<td>21</td>
<td>57.24</td>
<td>18.58</td>
</tr>
<tr>
<td>Day 2</td>
<td>21</td>
<td>44.82</td>
<td>14.95</td>
<td>21</td>
<td>51.13</td>
<td>15.27</td>
</tr>
<tr>
<td>Day 3</td>
<td>21</td>
<td>39.33</td>
<td>10.86</td>
<td>21</td>
<td>45.86</td>
<td>12.36</td>
</tr>
<tr>
<td>Day 4</td>
<td>21</td>
<td>29.00</td>
<td>9.23</td>
<td>21</td>
<td>34.86</td>
<td>14.23</td>
</tr>
<tr>
<td>Day 5</td>
<td>21</td>
<td>20.19</td>
<td>9.44</td>
<td>21</td>
<td>27.52</td>
<td>13.59</td>
</tr>
</tbody>
</table>

Note: Scores could range from 0-100 for workload

### Table 3

*Means and standard deviations for each day for Arabic 2*

<table>
<thead>
<tr>
<th>Day</th>
<th>$n$</th>
<th>$M$</th>
<th>SD</th>
<th>$n$</th>
<th>$M$</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>18</td>
<td>51.50</td>
<td>20.43</td>
<td>18</td>
<td>49.39</td>
<td>18.69</td>
</tr>
<tr>
<td>Day 2</td>
<td>18</td>
<td>44.61</td>
<td>21.30</td>
<td>18</td>
<td>42.06</td>
<td>18.74</td>
</tr>
<tr>
<td>Day 3</td>
<td>18</td>
<td>36.00</td>
<td>21.27</td>
<td>18</td>
<td>32.06</td>
<td>17.41</td>
</tr>
<tr>
<td>Day 4</td>
<td>18</td>
<td>28.94</td>
<td>20.25</td>
<td>18</td>
<td>23.28</td>
<td>13.74</td>
</tr>
<tr>
<td>Day 5</td>
<td>18</td>
<td>23.11</td>
<td>19.66</td>
<td>18</td>
<td>16.33</td>
<td>13.52</td>
</tr>
</tbody>
</table>

Note: Scores could range from 0-100 for workload
Table 4

*Means and standard deviations for each day for Arabic 3*

<table>
<thead>
<tr>
<th>Day</th>
<th>$n$</th>
<th>$M$</th>
<th>$SD$</th>
<th>$n$</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>19</td>
<td>57.47</td>
<td>12.44</td>
<td>19</td>
<td>59.05</td>
<td>16.35</td>
</tr>
<tr>
<td>Day 2</td>
<td>19</td>
<td>49.16</td>
<td>14.64</td>
<td>19</td>
<td>54.53</td>
<td>13.72</td>
</tr>
<tr>
<td>Day 3</td>
<td>19</td>
<td>36.89</td>
<td>12.31</td>
<td>19</td>
<td>45.47</td>
<td>8.42</td>
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<tr>
<td>Day 4*</td>
<td>19</td>
<td>25.05</td>
<td>9.73</td>
<td>19</td>
<td>37.21</td>
<td>10.17</td>
</tr>
<tr>
<td>Day 5*</td>
<td>19</td>
<td>16.16</td>
<td>8.14</td>
<td>19</td>
<td>26.32</td>
<td>10.61</td>
</tr>
</tbody>
</table>

Note: Scores could range from 0-100 for workload. Only Days 4 and 5 had significant results.

**Research Question 3**

The third research question aimed to determine whether the strategy (keyword vs. context method) would affect strategy use for learners in various levels of Arabic (Arabic 1, Arabic 2, and Arabic 3). Participants rated how often they used the strategy they were assigned while completing the post-test. Because the post-test consisted of two different sections (i.e., a cloze section and a matching section), there were two scales for participants to report their usage during post-test completion. A 5-point Likert scale was used to record level of strategy use with 0 indicating that the strategy was used none of the time and 5 indicated the strategy was used all the time. For each level of Arabic, two separate one-way ANOVAs were calculated. The first ANOVA tested whether or not
there was any difference in strategy usage on the cloze section of the test, and the second ANOVA tested whether a difference existed on the matching section.

For Arabic 1, for the cloze section, there was a significant effect of the independent variable, strategy (keyword vs. context), on the dependent variable (strategy use) at the $p = .05$ level for the three conditions, $F(1, 40) = 5.78, p = .021, \eta_p^2 = .13$. The mean score for the keyword group was 2.95 and for the context group 2.19.

As for the matching section, no significant effect of the independent variable, strategy (keyword vs. context), on the dependent variable (strategy use) at the $p = .05$ level, $F(1, 40) = .13, p = .72, \eta_p^2 = .003$ was found. The mean score for the keyword group was 2.76 and for the context group 2.62.

For Arabic 2, for the cloze section, there was a significant effect of the independent variable, strategy (keyword vs. context), on the dependent variable (strategy use) at the $p = .05$ level, $F(1, 34) = 6.92, p = .013, \eta_p^2 = .17$. The mean score for the keyword group was 2.22 and for the context group 2.5.

As for the matching section, there was also a significant effect of the independent variable, strategy (keyword vs. context), on the dependent variable (strategy use) at the $p = .05$ level, $F(1, 34) = 9.74, p = .004, \eta_p^2 = .22$. The mean score for the keyword group was 3.22 and for the context group 3.61.

For Arabic 3, for the cloze section, there was no significant effect of the independent variable, strategy (keyword vs. context), on the dependent variable (strategy use) at the $p = .05$ level, $F(1, 38) = .28, p = .60, \eta_p^2 = .007$. The mean score for the keyword group was 2.3 and for the context group 2.5.
As for the matching section, there was also no significant effect of the independent variable, strategy (keyword vs. context), on the dependent variable (strategy use) at the $p = .05$ level, $F(1, 38) = 1.28, p = .26, \eta^2_p = .03$. The mean score for the keyword group was 2.7 and for the context group 2.25. Table 3 summarizes these findings and Figures 7 and 8 illustrate the differences between the keyword and context groups in Arabic 1, Arabic 2, and Arabic 3.

Table 5

*Strategy Usage by Section*

<table>
<thead>
<tr>
<th>Level</th>
<th>Cloze Section</th>
<th>Matching Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arabic 1</td>
<td>keyword higher</td>
<td>no significant differences</td>
</tr>
<tr>
<td>Arabic 2</td>
<td>context strategy higher</td>
<td>context strategy higher</td>
</tr>
<tr>
<td>Arabic 3</td>
<td>no significant differences</td>
<td>no significant differences</td>
</tr>
</tbody>
</table>

![Cloze section- Strategy Usage](image)

**Figure 7.** Cloze section results for Arabic 1, Arabic 2, and Arabic 3.
Quality of Training

The researcher also attempted to understand the quality of the training that was completed by the participants. In order to do so, one rubric for each strategy was created, and then two raters scored the training material of all the participants. The first rubric, shown in Figure 9, was used to score the participants who used the keyword strategy, and the second rubric, shown in Figure 10 was used to score the participants who used the context strategy.

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>The problem clearly showed a picture along with a sentence using the meaning of the vocabulary word while linking it to a similar sounding English word.</td>
</tr>
<tr>
<td>Very Good</td>
<td>The problem showed that the learner created a sentence using the meaning of the vocabulary word while linking it to a similar sounding English word.</td>
</tr>
<tr>
<td>Acceptable</td>
<td>The learner was able to link the meaning of the vocabulary word with a similar sounding English word and use it in a phrase.</td>
</tr>
<tr>
<td>Minimal</td>
<td>The learner was able to link the meaning of the vocabulary word with a similar sounding English word.</td>
</tr>
<tr>
<td>No Attempt</td>
<td>No attempt was made to use the strategy.</td>
</tr>
</tbody>
</table>

Figure 9. *Rubric used for keyword Strategy.*
Excellent | The learner correctly used the vocabulary word in 3 separate sentences, and had a maximum of 2 mistakes/sentence.
---|---
Very Good | The learner correctly used the vocabulary word in 2 separate sentences, and had a maximum of 2 mistakes/sentence.
---|---
Acceptable | The learner correctly used the vocabulary word in 1 sentence, and had a maximum of 2 mistakes/sentence.
---|---
Minimal | The learner correctly used the vocabulary word in a phrase and had no more than 1 mistake.
---|---
No Attempt | No attempt was made to use the strategy.

Figure 10. *Rubric used for Context Strategy.*

Once the raters completed scoring all the training packets for all the problems, numerical values were assigned to the score so that a score of Excellent received 5 points and a score of No Attempt received a score of 1. This allowed for the researcher to calculate the inter-rater reliability scores as shown in Table 2-4. An inter-rater reliability score was calculated for each problem (1-9) in each level (Arabic 1, Arabic 2, Arabic 3) for each strategy (keyword and context) as well as an overall score for each level.

Table 6

*Inter-rater scores for Arabic 1*

<table>
<thead>
<tr>
<th>Problem</th>
<th>keyword for Arabic 1</th>
<th>context for Arabic 1</th>
<th>overall for Arabic 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>.934</td>
<td>.906</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>.961</td>
<td>.880</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>1</td>
<td>.925</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>.924</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>.912</td>
<td>.964</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>.959</td>
<td>.951</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>.913</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>.950</td>
<td>.972</td>
</tr>
<tr>
<td>9</td>
<td>9</td>
<td>.939</td>
<td>.974</td>
</tr>
</tbody>
</table>
Table 7

*Inter-rater scores for Arabic 2*

<table>
<thead>
<tr>
<th>Problem</th>
<th>keyword for Arabic 2</th>
<th>context for Arabic 2</th>
<th>overall for Arabic 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>.959</td>
<td>.965</td>
<td>.959</td>
</tr>
<tr>
<td>3</td>
<td>.950</td>
<td>1</td>
<td>.950</td>
</tr>
<tr>
<td>4</td>
<td>.983</td>
<td>1</td>
<td>.983</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>.947</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>.943</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>.974</td>
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<tr>
<td>8</td>
<td>1</td>
<td>.980</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>.953</td>
<td>.936</td>
<td>.952</td>
</tr>
</tbody>
</table>

Table 8

*Inter-rater scores for Arabic 3*

<table>
<thead>
<tr>
<th>Problem</th>
<th>keyword for Arabic 3</th>
<th>context for Arabic 3</th>
<th>overall for Arabic 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>.963</td>
<td>.987</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>.874</td>
<td>.950</td>
</tr>
<tr>
<td>3</td>
<td>.944</td>
<td>.896</td>
<td>.931</td>
</tr>
<tr>
<td>4</td>
<td>.955</td>
<td>1</td>
<td>.970</td>
</tr>
<tr>
<td>5</td>
<td>.886</td>
<td>1</td>
<td>.946</td>
</tr>
<tr>
<td>6</td>
<td>.985</td>
<td>1</td>
<td>.993</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>.964</td>
<td>.985</td>
</tr>
<tr>
<td>8</td>
<td>.978</td>
<td>.982</td>
<td>.980</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>.968</td>
<td>.985</td>
</tr>
</tbody>
</table>

Three separate one-way ANOVA tests compared the quality of the training for the keyword and context strategies for each level of Arabic as measured by the overall training score.
When examining the results of the Arabic 1 learners, there was no significant effect of the independent variable, strategy (keyword vs. context), on the dependent variable (training quality) at the \( p = .05 \) level \( F(1, 42) = 3.71, p = .06, \eta_p^2 = .09 \). The mean score for the keyword group was 67.10 and for the context group 58.86.

When examining the results of the Arabic 2 learners, there was a significant effect of the independent variable, strategy (keyword vs. context), on the dependent variable (training quality) at the \( p = .05 \) level \( F(1, 36) = 3.04, p = .09, \eta_p^2 = .09 \). The mean score for the keyword group was 75.38 and for the context group 66.38.

When examining the results of the Arabic 3 learners, there was a significant effect of the independent variable, strategy (keyword vs. context), on the dependent variable (training quality) at the \( p = .05 \) level \( F(1, 38) = 3.19, p = .08, \eta_p^2 = .08 \). The mean score for the keyword group was 60.21 and for the context group 51.95.
CHAPTER IV

DISCUSSION AND CONCLUSIONS

The purpose of this study was to compare the keyword and context strategies with learners enrolled in various undergraduate Arabic courses (Arabic 1, Arabic 2, and Arabic 3) to determine their impact on vocabulary learning and perceived workload during instruction. The discussion that follows is an interpretation of the results organized according to each research question, recommendations, as well as implications of the study.

Research Question 1

The first research question examined the differences between the keyword and context strategy groups in regards to their post-test results. Researchers agree that there may not be one single effective strategy for vocabulary learning in foreign languages, and that many factors, such as the learning environment and a learner’s motivation, must be taken into consideration when trying to determine whether a strategy is effective in learning vocabulary (Sadeghi & Nobakht, 2014). Therefore, it is not a surprise that the results of the post-test scores provided three different outcomes. No significant differences were found in learners in Arabic 1. In Arabic 2, the keyword group outperformed the context group, and in Arabic 3 the context group outperformed the keyword group.

McDaniel, Pressley & Dunay (1987) had found that learners who used the keyword strategy did better than the learners who used the context strategy when given an immediate post-test. The same results were repeated with the Arabic 2
learners. The keyword group was superior to the context group when given an immediate post-test.

In Arabic 3, the context group was superior to the keyword group. What is important to note is that Arabic words, like other Semitic languages, are derived from roots and patterns. Often times, Arabic words consist of three constants that form a root, and then are inserted into different patterns which may consist of vowels and other consonants to give the meaning of the word. In English, for example, Ryding (2005) explains how the English “sng” constants can be thought of being a root, and from that stems the words sing, sang, song, singing, etc. The different vowels when inserted with the root “sng” provide different meanings to the word and so do any prefixes and/or suffixes that can be added. Arabic morphology functions in this same way, with the root providing a meaning and a pattern providing a separate meaning. Together both the root and pattern give the meaning of the word. Because of this, it is logical to find that Advanced Arabic learners would perform better using the context strategy. Not only are learners able to rely on the surrounding context of the word to help them decipher the meaning of the unknown word, but they are also able to rely on the root and/or pattern of an unknown word since their vocabulary knowledge is much broader than that of someone just beginning to learn the language.

These results are also consistent with Van Hell and Mahn’s (1997) study, in which more experienced foreign language learners found the keyword strategy to be less effective. The more experienced learners are more aware of the phonological differences between a person’s native language and the foreign language (Van Hell & Mahn, 1997). The more someone studies a language, the better his or her
phonological memory will become which may aid in learning new vocabulary. Van Hell and Mahn (1997) had participants use either the keyword strategy or rote rehearsal, and while rote rehearsal was not used in this study it proposes that learners of higher proficiency levels may benefit more from using a strategy other than the keyword strategy.

Another interesting note is the difference between the types of processing that occurs when using each strategy. The keyword strategy relies more on acoustic and visual images, which is more of a shallow type of processing while the context method requires the learner to use semantics to infer meaning. This is more of a deep processing, which in turn would be superior according to the depths of processing theory (Craik & Tulving, 1975).

**Research Question 2**

The second research question examined the perceived workload of the learners in hopes of determining if this would predict how successful a learner would be when using the keyword or context strategy. In all levels, a downward linear effect was observed for workload reported over the training days. Perceived workload was highest on the first day of training and slowly decreased over time and was lowest on the final day of training. Even though no significant differences were found between the two strategies in each level, all groups showed the same tendency in regards to perceived workload.

Two recent studies also examined whether any differences would exist in regards to workload and proficiency level of the learner. In Kor and Chuah’s (2014) study, a mathematical software was used, and no significant differences were found between the technology usage of the individual and workload. In other words students who were high
technology users compared the same as those who used technology infrequently. In the second study, researchers observed the cognitive load of students of different achievement levels when using an inquiry based mobile learning model (Shih, Chuang, & Hwang, 2010). Once again, no significant differences were found among the low achievement, middle achievement, and high achievement groups of learners.

Together all three of these studies then suggest that the ability of the learner does not play a role in determining perceived workload, and that neither the keyword or context strategy places any type of extra burden on the learner and should not affect the learning ability.

The fact that the workload decreased over time may be a result of the learner becoming accustomed to the training. The more exposure a learner has with a given situation, the more likely it is that workload will be reduced over time (Meissner & Bogner, 2012). When the learner is first given the training, it is a new experience and he/she has no background to rely on, which may lead to high perceived workload. The learner may need more time to process how to use the strategy on the first day in comparison to the fifth day. However, as time goes on, the training becomes more familiar, and the learner has practiced more, thus reducing the amount of workload.

The amount of perceived workload may allow us to predict how successful a learner may be in a given task. In an ideal learning environment, learners will have high performance levels with low perceived workload scores (Galy, Cariou, & Mélan, 2012). In the current study, the perceived workload of Arabic 1 learners decreased over time and their overall performance based on their post-test scores were high. With Arabic 2 learners, the perceived workload decreased over time, but when comparing workload
with the post-test scores, the performance was high for only the keyword learners. With Arabic 3 learners, the perceived workload also decreased over time, but based on the performance on the post-test only the context group scored high. Figure 9 shows the means for the post-test scores for the different groups of learners at each level. Although workload was consistently decreasing across all groups, not all groups performed equally on the post-test.

The workload for the context learners in Arabic 2 and the keyword learners in Arabic 3 decreased over time, and this may be due to other factors. Two factors that may play a role in performance are motivation and emotion (Clark, Howard, & Early, 2006). When performance and workload are low, a lack in motivation may be the cause (Clark et al, 2006). Motivation is a key element in how successful a learner will be when given a complex task to complete. Some learners lack the motivation needed to be successful at a task and thus stop investing workload in that task. The vocabulary that participants learned in this study was chosen to be vocabulary words appropriate for the proficiency level. However, these words were not necessarily a part of the participants’ current study, and this may have caused some participants to lack motivation to learn the words. Others may have found the task so overwhelming that they did not know how to deal with it, and this may lead to some type of distraction because they feel that they cannot control whether they succeed or fail (Clark et al, 2006). Additionally, “more advanced learners may not be motivated to invest mental effort in learning tasks that were designed for novices, or to use approaches that are excessively structured” (Paas, Tuovinen, van Merriënboer, Darabi, 2005, p.30). The keyword strategy is more structured and gives the learner more rules to follow in comparison with the context strategy. On the other
hand, a task may be too easy for a learner who is not willing to invest the workload and therefore does not learn (Paas et. al, 2005).

**Research Question 3**

The final research question tried to determine whether learners would use the strategy when being tested. There were significant differences found in Arabic 1 on the cloze section with the keyword group reporting a higher usage of strategy, but no significant differences were found on the matching section. In Arabic 2, the context strategy group reported higher usages on both the cloze and matching sections. Finally, in Arabic 3, no significant differences were found in regards to either section.

In Arabic 2 and 3, in order for the learner to reach an intermediate and advanced level in the language, the learners are moving away from just memorizing vocabulary and simple sentence structures to more complex structures and being able to speak about more complicated topics. For example, in Arabic 1, students are able to speak about their families, their hobbies and their daily activities. In Arabic 2, students begin to speak about well-known people in history, migration, and religion. In Arabic 3, students are often working with authentic texts and may read short stories by well-known authors and are becoming more involved with media Arabic. Oxford (1990) explained that a feasible cause for not observing high usage memory strategies among more advanced learners is that these strategies are often used for more novice learners while they are still in the beginning stages of language learning. The more advanced a learner becomes the less likely they are to use the memory strategies. The results of the current study support Oxford’s claim since there was a high usage of keyword in Arabic 1 but not in Arabic 2 or 3.
Although no qualitative data was sought from this study, a few participants made comments on their post-tests about the strategy use. One participant wrote that she is “a verbal learner, not a pictorial learner…. [and] that the extra word confuses the definition.” Instead of remembering the definition of the word, she felt that she would only be able to remember the English word that she was linking the Arabic word to. This learner reported that she used the keyword strategy less than half of the time in both sections of the test. One recommendation from prior research is to make sure that a strategy is a preference for the learner and is compatible with their learning style (Oxford, 2003). It is very possible that other learners felt the same way, and when a learning style does not match a particular strategy, it can often hinder learning (Oxford, 2003).

In Arabic 3, a couple of the learners wrote that they had their own strategies that they used, and they reported not using the strategy that they had received training on. These two learners scored 13 out of 14 and 12 out of 14 on the post-test (approximately 93% and 86% respectively). Although they reported that they did not use the strategies that they trained with, they are clearly very aware of knowing how they learn. Other research shows that students who are better able to explain what strategy they used and why are better language learners (Oxford, 2003), and although the students were not asked to report about why they did not use a strategy, these two learners did. They also scored high on the post-test, which supports the idea that good language learners can articulate how they learn (Chi, Deleeuw, Chiu, & Lavancher, 1994).
Often in the language class, and particularly in Arabic, no time is given to teaching strategies. Learners are presented with vocabulary words in Arabic with their English meaning and have to figure out on their own how to learn the words. If researchers can determine what are strategies that good learners use and help make learning be more effective, these strategies can then begin to be implemented in the classroom, whether it be an in class or out of class activity.

Research has shown that more advanced language learners tend to use strategies more often and are better able to master the foreign language (Zare, 2012). The purpose of this study was to determine if students would use the keyword or context strategy after receiving training in that strategy, but perhaps for future studies, language learners should be evaluated on what type of strategy they use. A number of factors such as gender, motivation, and proficiency level all can play a role in determining how strategies are used (Zare, 2012). The current study did not go into depth in this area and can be explored in more detail for future research.

**Recommendations**

Once all data was collected and analyzed a number of recommendations to the current study can be made to improve this research in future studies.

First, during each training session, the first 15 minutes of class time was allotted for the participants to use the strategy that they were assigned to. However, not all the participants used all 15 minutes, as was intended. After speaking with the instructors once the data was collected, some mentioned that some participants came to class 2-3 minutes late, and/or some participants finished the required problems and
reviewing the material before 15 minutes was up. For the future, it would be best to include a section on the training to have the participants write down the time they began the training and the time they ended the training.

Also for future research, it may be best to randomly assign the classes to receive one of the treatments rather than have each participant randomly assigned to a treatment. The strategies require different tasks for the participants to complete, and keyword strategy users may require less time than the context strategy users or vice versa.

Furthermore, in this study, results of the post-test supported McDaniel et. al. (1987) study in that after a one week delayed post-test no significant differences were found between the keyword and context group. This may be due to the fact that the keyword strategy only focuses on providing the learner with one link between the foreign language and native language. The context strategy, on the other hand, provides more opportunities for the learner to link the word with a context. In this study, the participants’ training packets showed three different contexts for the vocabulary, and it could be argued that because of multiple contexts more opportunities to encode the vocabulary were provided. However, because this study did not conduct a delayed post-test to find out if any differences existed, it is an area of interest in future research.

Finally, it is necessary to include more elaborate instructions for the participants using the strategy. Some of the participants did not use the strategy to the extent that I wanted them to. Many of the participants of the keyword group did not include an illustration to go along with their sentence and they may have only come
up with a mental image. Even when prompted by the instructors to include an image, some participants felt that they could not draw an appropriate image. Participants of the context strategy sometimes used the vocabulary word in only sentence, but in the examples, they were always provided with three separate sentences. It is unclear whether the participant did not know how to use the word in more than one sentence or if the participant thought that one sentence was sufficient for learning the word.

**Implications of this Study**

This research was conducted to determine if 1- the keyword or context strategies would be effective for Arabic language learners at the beginning, intermediate, and advanced levels, 2- how the strategy would affect perceived workload, and 3- if participants would use the strategy that they received training on.

The results of this study suggest that learners at a beginning level learner will benefit equally from receiving instructional guidance in using the keyword or context strategy, the intermediate learners will benefit the most from the keyword strategy, and the advanced learners will benefit the most from the context strategy. The expertise reversal effect may explain that the keyword strategy is best for lower proficiency levels and that the context strategy is best for more advanced learners. More advanced learners do not necessarily need extra instructional guidance because they already possess a background knowledge in the domain (Kalyuga, 2004). Furthermore, although in this study the Arabic learners were labeled as having an intermediate level of proficiency it may be that in reality they are true novices. There are no clear boundaries for when a novice learner becomes an expert; it is a continuous process (Kalyuga, personal communication, March 21, 2015). Because language learning is such a complex process,
many hours of instruction are needed to allow a learner to reach an intermediate or advanced level. Table 4 shows the amount of hours of instruction necessary for a learner to reach different proficiency levels in Arabic. Also because of the complexity of

Table 9

*Hours of Instruction for Proficiency Levels*

<table>
<thead>
<tr>
<th>Length of Training</th>
<th>Minimal Aptitude</th>
<th>Average Aptitude</th>
<th>Superior Aptitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 weeks (480 hours)</td>
<td>Novice High</td>
<td>Intermediate Low</td>
<td>Intermediate Low/Mid</td>
</tr>
<tr>
<td>24 weeks (720 hours)</td>
<td>Intermediate Low/Mid</td>
<td>Intermediate Mid/High</td>
<td>Intermediate High</td>
</tr>
<tr>
<td>44 weeks (1320 hours)</td>
<td>Intermediate High</td>
<td>Advanced Low</td>
<td>Advanced Mid/High</td>
</tr>
<tr>
<td>80-92 weeks (2400-2760 hours)</td>
<td>Advanced High</td>
<td>Superior</td>
<td>Superior</td>
</tr>
</tbody>
</table>


language not only is there one proficiency level, but there are subcategories (low, mid, and high) within each level. This may explain why the Arabic 2 learners seemed to benefit more from the keyword strategy.

In regards to the perceived workload, as was discussed earlier, no differences existed between the strategy and amount of workload. However, upon further examination, not all groups had good performance scores. This may be due to other factors such as motivation and emotion, as Clark et. al (2006) has clarified that performance relies on more than the instruction and workload. By not having the vocabulary items directly linked to the current area of study, some participants may not have felt motivated to learn the new words. In addition, because the keyword strategy is
more structured novice learners are more likely to benefit from this type of instructional strategy as is described by the expertise reversal effect.

Lastly, with respect to the usage of the strategy, Arabic 1 keyword learners reported using the strategy more than the context group only in the cloze section, the Arabic 2 context learners reported using the strategy more often than the keyword group in both sections, and no differences were found among Arabic 3 learners. Consistent with other research, the more advanced learners becomes the less likely they are to rely on memory strategies (Oxford, 1990). Additional research should focus on what strategies good learners use and when they use these strategies.

Conclusion

The results of this study suggest that as a learner first begins to learn a language a more structured strategy, such as the keyword, is more effective than a less structured strategy, such as the context strategy. Special attention should be taken into consideration when dealing with intermediate learners, who are neither novices nor experts. The advanced learners have a tendency to perform better with the context strategy, which is supported by the expertise reversal effect.

Perceived workload tends to decrease over time, as a learner becomes more accustomed to using a given strategy. However, other factors may also affect the overall performance of a learner, and the call for future research in terms of motivation and emotion by Clark et. al (2006) is supported by the findings of this study.

Finally, this research and other studies (Chi et.al, 1994; Kalajahi, Nimechisalem, & Pourshahian, 2012; Oxford, 2003) suggest that rather than focusing on whether or not a
strategy is used, it may be more beneficial to direct our attention to examining what strategies good language learners use and under what circumstances.
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Appendix A. Arabic Learning Strategy Information Form

You are being asked to take part in a research study of how Arabic college students may benefit from using a specific learning strategy for learning vocabulary. We are requesting that you take part because you are currently enrolled in an Arabic language class. Please read this form carefully and ask any questions you may have before agreeing to take part in the study.

**What the study is about:** The purpose of this study is to learn how students in different levels of Arabic (beginning, intermediate, and advanced) may benefit from using a specific learning strategy for learning vocabulary.

**What I will ask you to do:** If you agree to be in this study, you will be receiving a training packet that explains the learning strategy. Before receiving any training, you will take a pre-test. The pre-test will not count towards your grade in class. You will spend 15 minutes a class period for 5 class periods using this strategy to help you learn vocabulary. You will be provided with the vocabulary to learn, and will be submitting your work at the end of each 15 minute session. You will receive a participation grade each class period, and your instructor will be monitoring your work. At the end of each session, you will be asked to rate how difficult you thought using the strategy was. After using the strategy for the 5 class periods, you will take a post-test.

**Risks and benefits:**

I do not anticipate any risks to you participating in this study. You may benefit by learning a new way to assist you in studying vocabulary.

**Compensation:** If you complete all portions of the study you will be entered in a drawing to win a $50 Amazon gift card.

**Your answers will be confidential.** The records of this study will be kept private. In any sort of report we make public we will not include any information that will make it possible to identify you. Research records will be kept in a locked file; only the researchers will have access to the records.

**Taking part is voluntary:** Taking part in this study is completely voluntary. You may skip any questions that you do not want to answer. If you decide not to take part or to skip some of the questions, it will not affect your current or future relationship with the university. If you decide to take part, you are free to withdraw at any time.
If you have questions: The researcher conducting this study is Olla Al-Shalchi. Please ask any questions you have now. If you have questions later, you may contact Olla Al-Shalchi at olla.alshalchi@gmail.com or at 413-585-3462.

You will be given a copy of this form to keep for your records.
Appendix B. Demographic Information

Name: ________________________________________________________________

Age: __________________________________________________________________

Gender: __________________________________________________________________

Circle one answer for the following questions:

How long have you been studying Arabic?

Less than 1 year               1 year               2 years               3 years               4 or more years

Have you studied abroad in the Middle East?

☐ No

☐ Yes—Please describe when, length of time, focus of study, and if you spoke Arabic during your trip: __________________________________________________________
                                                                                       __________________________________________________________
                                                                                       __________________________________________________________

Have you visited the Middle East (not in a study abroad program)?

☐ No

☐ Yes—Please describe when, length of time, purpose of trip, and if you spoke Arabic during your trip: __________________________________________________________
                                                                                       __________________________________________________________
                                                                                       __________________________________________________________

Have you learned another foreign language?

☐ No

☐ Yes—Please list other language learned, nature of formal study or informal learning, length of time you studied and used this language: __________________________
                                                                                       __________________________________________________________
Is English your native language?

☐ No—What is/are your native language(s)? ________________________________

________________________________________________________

☐ Yes
Appendix C. Training Material for Beginning Arabic

Keyword Mnemonic Method

One way of learning foreign language vocabulary is to use the keyword mnemonic method. To use this method, you need to think of a word in your native language that sounds similar to the word you’re trying to learn. Then, create an image with the meaning of the words, and every time you hear the foreign language word think of that image. The more absurd the image is, the more likely you are to remember it. When you think of that image, it should help you remember the meaning of the word.

Let’s try an example:
You are learning the names of different foods in Arabic and one of the words that you need to learn is سمك (semek), fish. This word sounds similar to the English word smack. Now, create an image in which a fish is being used to smack someone. You may end up with something like this: Now every time you think of the word سمك (semek) think of the image of someone being smacked with a fish. This should help you remember the meaning of the word.

Let’s try another example.
You are learning about different types of buildings, and one of the words that you need to learn is موز (moz), the Arabic for banana. This word sounds similar to Moses. Now, picture Moses dressed in a banana costume.

Now it’s time to learn some vocabulary using this method. For the next week, you will be using this method to help you learn the vocabulary for this chapter. The vocabulary word and the word that it sounds similar to is written first. Then below that is a sentence using the meaning of the vocabulary word and the associated word. Each day you will review the words, and then you will create your own mnemonics for the remaining vocabulary.

That words that you will learn are:
قبل المدرسة
تسفر صديق
إلى
رابع
الطفولة
السفر
Before there was cable, people didn’t watch television.

When traveling, you can never be too safe.

I didn’t like to see my friend be sad.

The rabbit came in fourth place in the race.

All the children came out to play in the cul de sac.

The school principal was mad when the students did not show up.
I lived in Tafula, Mozambique during my childhood.

Fred is a main person in the Flintstones.

When traveling to Africa, we went on a safari, to see the lions.

Now in the space provided below, create your own mnemonics to help you in remembering the vocabulary. Create mnemonics for the following words:

<table>
<thead>
<tr>
<th>العربية</th>
<th>ترجمة</th>
<th>مثال</th>
</tr>
</thead>
<tbody>
<tr>
<td>أول</td>
<td>first</td>
<td>First is for first.</td>
</tr>
<tr>
<td>مطعم</td>
<td>restaurant</td>
<td>I go to the restaurant.</td>
</tr>
<tr>
<td>فواكه</td>
<td>fruit</td>
<td>I want some fruit.</td>
</tr>
<tr>
<td>سلطة</td>
<td>salad</td>
<td>I like salad.</td>
</tr>
<tr>
<td>زميل</td>
<td>colleague</td>
<td>I work with a colleague.</td>
</tr>
<tr>
<td>يقرأ</td>
<td>read</td>
<td>He reads.</td>
</tr>
<tr>
<td>كان</td>
<td>was</td>
<td>It was.</td>
</tr>
<tr>
<td>لحم</td>
<td>meat</td>
<td>We eat meat.</td>
</tr>
</tbody>
</table>
Context Method

We know that when teaching/studying a foreign language, you are bound to come across words that you do not know the meaning of. When you read something in your native language, this is also sure to happen, yet you do not stop to look up every word in the dictionary. Many times, you subconsciously guess the meaning of the word based on the context of the sentence. Here, you’ll be doing the same thing. Let’s begin by looking at an example.

Example 1:

Let’s say that the unknown word in these sentences is gather. Read the following sample sentences:
1- The students **gather** in the class every day.
2- During Thanksgiving, families **gather** for a feast.
3- The protesters will **gather** in front of this building at 8am and then go to city hall.

After reading the sentences, are you able to define gather? You should be able to conclude that gather means a group of people coming together. Now, let’s try another example.

Read the following sample sentences, and then see if you can define the highlighted word:

Example 2:

1- Tomorrow is Christmas; **hence** I will not be at work.
2- He has a paper due tomorrow; **hence** he will not watch television tonight.
3- I ate too much at dinner, **hence** I feel sick now.

After reading the sentences, you should have been able to infer that hence means therefore.

Now, we’ll use the same technique to learn some Arabic vocabulary. Read the following sentences and pay close attention to the highlighted word. Based on the sample sentences come up with a definition of the highlighted word. For the next week, you will be using this method to help you learn the vocabulary. Each day you’ll review the method, and then you will try to create your own examples using the remaining vocabulary.

That words that you will learn are:

قبل، تسافر، رابع، صديق، مدرسة، كل، فرد، الطفولة، السفر
Read each group of sentences and then write your definition of the word:

قبل الصف أكتب واجبي. لا أكل كيك قبل العشاء.
لا تحب الطائرات ولا تسافر.
تأتي لا تسافر كثيرا. تسافر مها إلى القاهرة.
تدرس الدروس الرابع اليوم. لي 3 أخوة وأنا رابع ولد في الأسرة.
ندرس الدرس الرابع اليوم. المواطن督办 一周的第四天。
هذا صديقي من الجامعة وندرس في نفس الصف.
هو صديقي على فيسبوك فقط. لا أحب محمد. هو ليس صديق.
هذا صديقي من الجامعة وندرس في نفس الصف.
من منذ سنة كنت طالبة في المدرسة. قبل الجامعة ندرس في المدرسة.
ابني 5 سنوات ويدرس في المدرسة.
كل الطلاب بالصف يعرفون الانكليزية. أسكن مع كل أسرتي.
كل الصفوف في الجامعة صعبة. كان الطلاب بالصف يعرفون الانكليزية.
كل فرد في الصف يتكلم عن دراسته. والدتي أحسن فرد في الأسرة. زوجتي أكثر فرد أحبها.
في طفولته كان يسكن في دبي. تذكر طفولتها وعمرها 5 سنوات. هم أصدقاء من الطفولة.
لا أحب السفر بالآوتوبوس. السفر من أمريكا إلى الشرق الأوسط طويل. أحب السفر بالصيف.
Now using the space provided below create your own sentences with the following vocabulary. Pay special attention to context.

<table>
<thead>
<tr>
<th>أول</th>
<th>مطعم</th>
<th>فواكه</th>
</tr>
</thead>
<tbody>
<tr>
<td>first</td>
<td>restaurant</td>
<td>fruit</td>
</tr>
<tr>
<td>سلطة</td>
<td>مميش</td>
<td>زميل</td>
</tr>
<tr>
<td>salad</td>
<td>colleague</td>
<td>read</td>
</tr>
<tr>
<td>يستمع</td>
<td>كان</td>
<td>لحم</td>
</tr>
<tr>
<td>to listen</td>
<td>was</td>
<td>meat</td>
</tr>
</tbody>
</table>
Appendix D. Training for Intermediate Arabic

Keyword Mnemonic Method

One way of learning foreign language vocabulary is to use the keyword mnemonic method. To use this method, you need to think of a word in your native language that sounds similar to the word you’re trying to learn. Then, create an image with the meaning of the words, and every time you hear the foreign language word think of that image. The more absurd the image is, the more likely you are to remember it. When you think of that image, it should help you remember the meaning of the word.

Let’s try an example:

You are learning the names of different foods in Arabic and one of the words that you need to learn is سمك (semek), fish. This word sounds similar to the English word smack. Now, create an image in which a fish is being used to smack someone. You may end up with something like this: Now every time you think of the word سمك (semek) think of the image of someone being smacked with a fish. This should help you remember the meaning of the word.

Let’s try another example.

You are learning about different types of buildings, and one of the words that you need to learn is موز (moz), the Arabic for banana. This word sounds similar to Moses. Now, picture Moses dressed in a banana costume.

Now it’s time to learn some vocabulary using this method. For the next week, you will be using this method to help you learn the vocabulary for this chapter. The vocabulary word and the word that it sounds similar to is written first. Then below that is a sentence using the meaning of the vocabulary word and the associated word. Each day you will review the words, and then you will create your own mnemonics for the remaining vocabulary.

That words that you will learn are:

وطن القدس حمل ألف انسان تم جري كلب نشا
What’s that hon?
What’s that hon? It’s my homeland.

القدس – Kudos
There was a special kudos to the efforts of establishing peace in Jerusalem.

حمل – Hamlet
Hamlet carried Shakespeare on his shoulder.

الف - elephant
The baby elephant weighs 1000 lbs!
Insane
He is one insane person!

Tiny Tim
Tiny Tim completed his degree in Smallville.

Jar
Hurry, run away from the jar!

Nashville
He’s going to grow up to live in Nashville.
The dog got stuck in kelp.

Now in the space provided below, create your own mnemonics to help you in remembering the vocabulary. Create mnemonics for the following words.

<table>
<thead>
<tr>
<th>اختيار - choice</th>
<th>مثل - like</th>
<th>تاريخ - date</th>
</tr>
</thead>
<tbody>
<tr>
<td>ما أحبتي - how beautiful...is</td>
<td>طفل - child</td>
<td>سفارة - embassy</td>
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<td>إلخ - etc.</td>
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Context Method

We know that when teaching/studying a foreign language, you are bound to come across words that you do not know the meaning of. When you read something in your native language, this is also sure to happen, yet you do not stop to look up every word in the dictionary. Many times, you subconsciously guess the meaning of the word based on the context of the sentence. Here, you’ll be doing the same thing. Let’s begin by looking at an example.

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After reading the sentences, are you able to define **gather**? You should be able to conclude that **gather** means a group of people coming together. Now, let’s try another example.

Read the following sample sentences, and then see if you can define the highlighted word:

Example 2:

1- Tomorrow is Christmas; **hence** I will not be at work.
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3- I ate too much at dinner, **hence** I feel sick now.

After reading the sentences, you should have been able to infer that **hence** means therefore.

Now, we’ll use the same technique to learn some Arabic vocabulary. Read the following sentences and pay close attention to the highlighted word. Based on the sample sentences come up with a definition of the highlighted word. For the next week, you will be using this method to help you learn the vocabulary. Each day you’ll review the method, and then you will try to create your own examples using the remaining vocabulary.

That words that you will learn are:

**كلب** (كلب)
**نشأ** (نشأ)
**جرى** (جرى)
**تم** (تم)
**إنسان** (إنسان)
**ألف** (ألف)
**حمل** (حمل)
**القدس** (القدس)
**وطن** (وطن)

احيانا الفسطينيون يشعرون أنه ليس ولد في أمريكا وهذا **وطن**. عشت كل حياتي هنا في **وطن**. **وطن** لهم و **وطن**.
لماذا لم يتم إصلاح الحمام؟

لا تمشي – أجري بسرعة!

كل صباح أجري لنصف ساعة.

لا تمشي – أجري بسرعة!

هوايته المفضلة الجري.

وقدت ونشأت في مدينة نيويورك.

وأشطن دي سي.

لا تمشي – أجري بسرعة!

كل شهر أدفع ألف دولار لشقتي.

في هذه الشركة ألف موظف.

الكلب يحمي البيت.

الكلب أحسن صديق للرجل.

لا تمشي – أجري بسرعة!

ماجد حمل الكمبيوتر معه ليكتب الملاحظات من المحاضرة.

ندى حملت حقيبتها الكبيرة عندما سافرت.

لا تمشي – أجري بسرعة!

امسترونغ كان أول إنسان ينزل على القمر.

الإنسان لا يجب أن يعيش وحيدا.

الإنسان يحتفل بعيد ميلاده مرة كل سنة.

لا تمشي – أجري بسرعة!

أناستريونغ كان أول إنسان ينزل على القمر.

الإنسان لا يجب أن يعيش وحيدا.

الإنسان يحتفل بعيد ميلاده مرة كل سنة.

لا تمشي – أجري بسرعة!

امسترونغ كان أول إنسان ينزل على القمر.

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لا تمشي – أجري بسرعة!

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امسترونغ كان أول إنسان ينزل على القمر.

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لا تمشي – أجري بسرعة!

امسترونغ كان أول إنسان ينزل على القمر.

الإنسان لا يجب أن يعيش وحيدا.

الإنسان يحتفل بعيد ميلاده مرة كل سنة.

لا تمشي – أجري بسرعة!

امسترونغ كان أول إنسان ينزل على القمر.

الإنسان لا يجب أن يعيش وحيدا.

الإنسان يحتفل بعيد ميلاده مرة كل سنة.

لا تمشي – أجري بسرعة!

امسترونغ كان أول إنسان ينزل على القمر.

الإنسان لا يجب أن يعيش وحيدا.

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لا تمشي – أجري بسرعة!

امسترونغكان أول إنسان ينزل على القمر.

الإنسان لا يجب أن يعيش وحيدا.

الإنسان يحتفل بعيد ميلاده مرة كل سنة.

لا تمشي – أجري بسرعة!

امسترونغ كان أول إنسان ينزل على القمر.

الإنسان لا يجب أن يعيش وحيدا.

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لا تمشي – أجري بسرعة!

امسترونغ كان أول إنسان ينزل على القمر.

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لا تمشي – أجري بسرعة!

امسترونغ كان أول إنسان ينزل على القمر.

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الإنسان يحتفل بعيد ميلاده مرة كل سنة.

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الإنسان يحتفل بعيد ميلاده مرة كل سنة.

لا تمشي – أجري بسرعة!

امسترونغ كان أول إنسان ينزل على القمر.

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الإنسان يحتفل بعيد ميلاده مرة كل سنة.

لا تمشي – أجري بسرعة!

امسترونغ كان أول إنسان ينزل على القمر.

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لا تمشي – أجري بسرعة!

امسترونغ كان أول إنسان ينزل على القمر.

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الإنسان يحتفل بعيد ميلاده مرة كل سنة.
Now using the space provided below create your own sentences with the remaining vocabulary. Pay special attention to context.

<table>
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<td>اُخذ - was taken</td>
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</tr>
</tbody>
</table>
Appendix E. Training Material for Advanced Arabic

Keyword Mnemonic Method

One way of learning foreign language vocabulary is to use the keyword mnemonic method. To use this method, you need to think of a word in your native language that sounds similar to the word you’re trying to learn. Then, create an image with the meaning of the words, and every time you hear the foreign language word think of that image. The more absurd the image is, the more likely you are to remember it. When you think of that image, it should help you remember the meaning of the word.

Let’s try an example:

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Let’s try another example.

You are learning about different types of buildings, and one of the words that you need to learn is موز (moz), the Arabic for banana. This word sounds similar to Moses. Now, picture Moses dressed in a banana costume.

Now it’s time to learn some vocabulary using this method. For the next week, you will be using this method to help you learn the vocabulary for this chapter. The vocabulary word and the word that it sounds similar to is written first. Then below that is a sentence using the meaning of the vocabulary word and the associated word. Each day you will review the words, and then you will create your own mnemonics for the remaining vocabulary.

That words that you will learn are:

نسي، بغل، طرد، سكت، خيال، جني، جزار، صار، بات.
نسي – nice
It is not nice to forget my birthday.

بغل – bugle
The mule was playing the bugle in the park.

طرد – rid
They want to get rid of him and expel him from school.

سكت – second
Be silent for a second!
Kyle is chasing his imagination.

The genie is drinking gin.

The butcher likes to listen to jazz.

He spent the night next to a bat.
Don’t start to cough- you have SARS!

Now in the space provided below, create your own mnemonics to help you in remembering the vocabulary. Create mnemonics for the remainder of the following words.

<table>
<thead>
<tr>
<th>شر - evil</th>
<th>دستور - constitution</th>
<th>رسالة - message</th>
</tr>
</thead>
<tbody>
<tr>
<td>ملف - folder, file</td>
<td>ادراك - to realize</td>
<td>اغلبية - majority</td>
</tr>
<tr>
<td>توقعات - expectations</td>
<td>شامل - to include</td>
<td>المفارقة - irony</td>
</tr>
</tbody>
</table>
Context Method

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After reading the sentences, are you able to define gather? You should be able to conclude that gather means a group of people coming together. Now, let’s try another example.

Read the following sample sentences, and then see if you can define the highlighted word:

Example 2:

1- Tomorrow is Christmas; **hence** I will not be at work.
2- He has a paper due tomorrow; **hence** he will not watch television tonight.
3- I ate too much at dinner, **hence** I feel sick now.

After reading the sentences, you should have been able to infer that hence means therefore.

Now, we’ll use the same technique to learn some Arabic vocabulary. Read the following sentences and pay close attention to the highlighted word. Based on the sample sentences come up with a definition of the highlighted word. For the next week, you will be using this method to help you learn the vocabulary. Each day you’ll review the method, and then you will try to create your own examples using the remaining vocabulary.

That words that you will learn are:

بطاجين، سنة، طرد، جني، خيال، جزار، صار، بات
لا يستطيع أن يدفع للأكل في المطعم لأنه ليس له فلوس.

أظن أنني تعرفت عليه لكنه لم يكن يعلم معي.

لا يستطيع أن يدفع للأكل في فلوسه.

البغل يحمل بضائع وينقلها.

لا يستطيع أن يدفع للأكل في فلوسه.

البغل نوع من الحصان والحمار.

طرد الولد من المدرسة لأن لسانه طويل.

طرد الحاكم اللاعب من المباراة.

طرد الأساتذة الطالب من الصف.

لا يعرف كيف يتكلم عندما يتكلم.

الطفل يتكلم طول الليل ولم يتكلم.

لا يتكلم شخص آخر.

الخيال ليس له حدود.

الاطفال عندهم خيال كبير.

استخدام خياله لتكتيب القصة.

لا يعرف أن علاء الدين وجد الجني في كهف.

الجني يعيش في الكهف. الجني دائماً يعطي 3 امنيات.

الجني يعيش في الكهف.

الجنى يعاني من الفانوس. الجنى يعيش في الفانوس.

ه كان مريض في المستشفى لا بات في العطلة. ه في الفندق ليلة أمس.

نصبت واجبي في المكتبة. يفهم العربية لأنه يعيش في بلد عربي.

صارت الطائرة تطير بسرعة. صار المطر ينزل.

بات في البيت والده في العطلة. يب صار المطر ينزل.

بات في الفندق ليلة أمس. يفهم العربية لأنه يعيش في بلد عربي.
Now using the space provided below create your own sentences with the remaining vocabulary. Pay special attention to context.

<table>
<thead>
<tr>
<th>شر - evil</th>
<th>دستور - constitution</th>
<th>رسالة - message</th>
</tr>
</thead>
<tbody>
<tr>
<td>ملف - folder, file</td>
<td>ادرک - to realize</td>
<td>اغلبية - majority</td>
</tr>
<tr>
<td>توقعات - expectations</td>
<td>شمل - to include</td>
<td>المفارقة - irony</td>
</tr>
</tbody>
</table>
Appendix F. Participation Grades

<table>
<thead>
<tr>
<th>Day</th>
<th>Participation Grade</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>Strategy was used none of the time.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Strategy was used less than half of the time.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>Strategy was used half of the time.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>Strategy was used more than half of the time.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td>Strategy was used all of the time.</td>
</tr>
</tbody>
</table>

Day 1

Day 2

Day 3

Day 4

Day 5
Appendix G- Modified NASA TLX

**NASA Task Load Index**

Hart and Staveland’s NASA Task Load Index (TLX) method assesses work load on five 7-point scales. Increments of high, medium and low estimates for each point result in 21 gradations on the scales.

<table>
<thead>
<tr>
<th>Name</th>
<th>Task</th>
<th>Date</th>
</tr>
</thead>
</table>

**Mental Demand**

How mentally demanding was the task?

- Very Low
- Very High

**Temporal Demand**

How hurried or rushed was the pace of the task?

- Very Low
- Very High

**Performance**

How successful were you in accomplishing what you were asked to do?

- Perfect
- Failure

**Effort**

How hard did you have to work to accomplish your level of performance?

- Very Low
- Very High

**Frustration**

How insecure, discouraged, irritated, stressed, and annoyed were you?

- Very Low
- Very High
Appendix H. Post-test for Beginning Arabic

Complete the following sentences using the words below. Some words will not be used. Do not use a word more than once.

<table>
<thead>
<tr>
<th>أسرته</th>
<th>طفولتها</th>
<th>تتذكر</th>
<th>ضابط</th>
<th>التاريخ</th>
<th>كل</th>
</tr>
</thead>
<tbody>
<tr>
<td>الطب</td>
<td>لحم</td>
<td>يدرس</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. ___________ يوم أسمع إلى الراديو.
2. لا أعرف أين كانت تسكن في ___________.
3. من ___________ صف التاريخ؟
4. أحب الأكل في هذا ___________.
5. محمد ___________ طالب معي السنة الماضية.
6. الدكتور يدرس في كلية ___________.
7. عم مها ___________ في الجيش.

<table>
<thead>
<tr>
<th>All of the Time</th>
<th>Some of the Time</th>
<th>Half of the time</th>
<th>Less than half of the time</th>
<th>None of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>For the first section on the test (fill in the blank), how often did you use the strategy you had training in?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Matching:

<table>
<thead>
<tr>
<th></th>
<th>1. السفر (traveling)</th>
<th>2. مدرسة (school)</th>
<th>3. صورة (picture)</th>
<th>4. زميل (colleague)</th>
<th>5. يأكل (to eat)</th>
<th>6. يقرأ (to read)</th>
<th>7. سلطة (salad)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th>All of the Time</th>
<th>Some of the Time</th>
<th>Half of the time</th>
<th>Less than half of the time</th>
<th>None of the time</th>
</tr>
</thead>
</table>

For the second section on the test (matching), how often did you use the strategy you had training in?
Appendix I. Post-test for the Intermediate Arabic

Complete the following sentences using the words below. Some words will not be used. Do not use a word more than once.

أذكى
حمل
ولد
ما احلى
يتكوّن
تنتهي
ربما
يصحو
 ألف

1. هناك أكثر من ______________ موظف يعمل في الشركة.
2. في الصباح عادة ليس عندما وقت للفطور ______________ قهوتها وشربها بالسيارة.
3. __________ مدينتي! لن أعيش في أي مكان آخر.
4. بيتنا ______________ من طابقين وأمام البيت حديقة.
5. لا ______________ قبل الساعة السابعة.
6. هؤلاء الطلاب ______________ الطلاب في صفنا.
7. ريم صديقة مها وهي تدرس الأدب ______________ والدتها.

<table>
<thead>
<tr>
<th>All of the Time</th>
<th>Some of the Time</th>
<th>Half of the time</th>
<th>Less than half of the time</th>
<th>None of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>For the first section on the test (fill in the blank), how often did you use the strategy you had training in?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Matching:

1. **انسان** to complete __________
2. **اُخذ** was taken __________
3. **سفارة** idea __________
4. **نصيحة** person __________
5. **فكرة** blind __________
6. **تم** embassy __________
7. **أعمى** advice __________

<table>
<thead>
<tr>
<th>All of the Time</th>
<th>Some of the Time</th>
<th>Half of the time</th>
<th>Less than half of the time</th>
<th>None of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>For the second section on the test (matching), how often did you use the strategy you had training in?</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Appendix J. Post-test for the Advanced Arabic Class

Complete the following sentences using the words below. Some words will not be used. Do not use a word more than once.

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ادرك</td>
<td>أخرج</td>
<td>جزار</td>
<td>شر</td>
<td>uncture</td>
</tr>
<tr>
<td>العصرية</td>
<td>الوالي</td>
<td>نسي</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1- كانت والدتي دائما تشتري اللحم من __________.
2- مع أي ذهبتي إلى بيت صاحبي عدة مرات دائما ______________ عنوانه.
3- ______________ الفلم ستيفن سبيلبرغ في عام 1982.
4- يا الله! هذا الطفل دائما يبكي ولا ________________.
5- مدينة نيويورك تعتبر إحدى المدن ________________.
6- يجب أن أضع كل أوراقي في هذا ________________ كما أراد أستاذنا.
7- ________________ وقت صلاة الفجر.

<table>
<thead>
<tr>
<th>All of the Time</th>
<th>Some of the Time</th>
<th>Half of the time</th>
<th>Less than half of the time</th>
<th>None of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>For the first section on the test (fill in the blank), how often did you use the strategy you had training in?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Matching:

1. بغل
2. رسالة
3. بات
4. كاف
5. طرد
6. المفارقة
7. زاد

irony
mule
to increase
enough
to become
message
to expel

<table>
<thead>
<tr>
<th>All of the Time</th>
<th>Some of the Time</th>
<th>Half of the time</th>
<th>Less than half of the time</th>
<th>None of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>For the second section on the test (matching), how often did you use the strategy you had training in?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
VITA

Olla Najah Al-Shalchi
Old Dominion University
STEM and Professional Studies, Darden College of Education
Norfolk, Virginia

Education
* Ph.D. in Instructional Design and Technology at Old Dominion University (Anticipated Graduation Spring 2015)
* M.A. in Teaching Arabic as a Foreign Language at the American University in Cairo (September 2003-February 2006)
* Center for Arabic Study Abroad full year fellow (June 2002-May 2003)
* Received a B.A. with Honors from the University of Texas in Austin with a double major in Arabic Language and Literature and Islamic Studies (June 1999-May 2002)
* Attended the intensive summer program at Middlebury College (Summer 2001)

Experience In Higher Education
* Smith College (July 2012-Present)
  * Five College Arabic Language Lecturer
  * Courses taught:
    * Elementary Arabic, Intermediate Arabic, and Advanced Arabic
  * Participated in development of placement exams
  * Participated in extracurricular activities relating to Arabic and the Middle East
  * Developed Five College Arabic Language website
  * Created supplementary material to be used in all Arabic classes
  * Taught at the following campuses: Smith College, Hampshire College, Amherst College, & Mount Holyoke College
* Williams College (Fall 2014-Spring 2015)
  * Visiting Lecturer in the Comparative Literature Program
  * Courses taught:
    * Advanced Arabic and Iraqi Colloquial
  * Arabic Language Specialist
  * Courses taught:
    * Elementary Arabic (ARAB 1001 and 1002) and Intermediate Arabic (ARAB 2002)
  * Hosting the Arabic Circle Meeting with other Arabic Faculty
  * Host the Language Café once a month
* College of William and Mary (Fall 2006-August 2011, August 2012)
  * Visiting Instructor and Researcher
  * Responsibilities:
    * Arabic House Supervisor
    * Teaching Assistant Supervisor
Contributing author to a new Arabic textbook series, *Teaching Arabic Variation: Developing language resources for integrating Modern Standard Arabic and Arabic dialects*

- Co-Author of a new Iraqi Dialect textbook (work in progress)

**Courses Taught:**
- Elementary Arabic (ARAB 101 and 102),
- Intermediate Arabic (ARAB 201 and 202)
- Advanced Arabic (ARAB 301 and 302)
- Introduction to Arab Culture (ARAB 311)
- Arabic Literature in Translation (ARAB 309)
- Iraqi Arabic (ARAB 290)

**Middlebury College (Summer 2003 and Summer 2005)**
Arabic Language Instructor

- Taught Arabic to Level 1 and Level 1.5 students
- Attended weekly faculty meetings
- Attended weekly movie showings and lectures
- Participated in the Arabic Dinner
- Attended extracurricular activities for the Arabic School
- Helped supervise in the cooking club and cinema club
- Developed various exercises and drills to help with all language skills

**Arabic Language Institute in the American University of Cairo (September 2003- May 2005)**
Teacher/ Tutor

- Co-Taught beginning level Arabic students
- Taught Media to Intermediate level Arabic students
- Tutored students from Beginning levels, Intermediate levels, and Advanced levels of Arabic
- Substituted for various levels and subjects for ALI teachers

**Presentations**


**Publications**