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Vocabulary Learning Strategies Utilised by EFL Omani Students in Oman: The Effect of Age, Gender, and Levels of Study

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ABSTRACT

This study quantitatively examines the vocabulary learning strategies (VLSs) employed by EFL Omani students. A 59-item questionnaire adapted from Schmitt's taxonomy was utilised, with validity ensured through a pilot study involving 50 respondents and experts' review. The final sample included 195 male and female students from the second semester of the 2023–2024 academic year. Data analysis using SPSS 29 included frequency, mean, standard deviations, and significance differences using an independent sample t-test and one-way ANOVA. The results showed that Metacognitive strategies had the highest mean score, making them the most frequently used vocabulary learning strategies among EFL Omani students. In contrast, Memory strategies had the lowest mean score, indicating they were the least preferred approach to vocabulary learning. Determination strategies showed mixed results, with guessing meaning from context and using bilingual dictionaries being more favored, whereas using flashcards and monolingual dictionaries were less preferred. Cognitive strategies also varied, with verbal and written repetition being commonly used, whereas labeling objects and using flashcards had lower mean scores. Regarding the effect of age, gender, and levels of study on VLSs, age does not significantly affect vocabulary learning strategies, as all p-values exceed 0.05, and effect sizes are negligible. Gender significantly influences Determination, Cognitive, and Metacognitive strategies ($p < 0.05$), with females scoring higher,

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whereas Social and Memory strategies show no gender-based differences. Further, the level of study does not significantly impact strategy use ($p > 0.05$), though Metacognitive strategies show a slight upward trend among advanced students.
Keywords: VLSs; Omani Students; Gender; Age; Schmitt's Taxonomy; Vocabulary

1. Introduction

For EFL university students, vocabulary is crucial, and according to Alsahafi[1], the depth of EFL students' academic vocabulary knowledge serves as a strong indicator of academic achievement, as it facilitates comprehension of academic materials and lectures. However, vocabulary instruction has received comparatively less attention than the other aspects of foreign language learning[2]. Furthermore, determining the most effective vocabulary learning strategy (VLS) has been challenging, despite earlier studies dating back to the 1970s[3]. This highlights the importance of vocabulary learning strategies, which help learners overcome these difficulties by storing words in their memory and retrieving them when needed for communication. Similar to students in other institutions worldwide, EFL students encounter multiple challenges in acquiring the vocabulary and expertise necessary to effectively comprehend a second or foreign language in their fields of study[4]. One of the greatest challenges foreign language learners encounter is memorizing vocabulary. The challenges faced by EFL learners can be attributed to their inability to employ effective methods for learning and remembering language when necessary[5]. Consequently, to effectively acquire unfamiliar vocabulary, learners need to be taught a variety of vocabulary learning strategies[6].

Though some research has been conducted on vocabulary learning strategies, limited studies have been conducted on vocabulary learning strategies followed by Omani students who represent a special case compared with other Arab students. Oman has several local Omani languages that are initially acquired in early childhood, followed by the Arabic language, whereas English is learned as a third language. Additionally, the research that has investigated VLSs has produced contradictory and conflicting findings. Therefore, it is necessary to address these research gaps to provide effective ways for vocabulary acquisition and/or learning. Accordingly, Haddad[7] suggested conducting additional research to examine the factors influencing the extent to which EFL students at different universities, ages, genders, and college majors use vocabulary learning strategies. She also recommended examining how students' study habits and academic performance are impacted by the terminology they acquire. Other studies suggested looking at the reasons why female students use VLSs more frequently than their male counterparts[8]. Additionally, Haddad proposes that several factors, such as autonomy, second-language skill level, and motivation for learning a second language, can be considered when examining how both male and female learners apply VLSs. Thus, future research ought to examine the connection between the use of VLSs by EFL learners and various characteristics, such as gender and language ability[9]. Additional research on the characteristics that support male learners' success in vocabulary acquisition and language learning is recommended by several studies[5, 10, 11]. Because L2 learners have varying "cultural and educational backgrounds that perceive certain types of strategies more favorably than others" research on VLSs has demonstrated the significance of individual variances in VLS preferences ([12], p. 277). To obtain more precise and broadly applicable results, future research may additionally analyse data from a larger sample[13]. Consequently, this study aims to investigate the patterns of vocabulary learning strategies employed by undergraduate EFL Omani students at one of the public universities in the Sultanate of Oman. Pedagogically, the findings of this study can be useful to teachers, students, and researchers. On one hand, teachers will be able to realize which vocabulary learning strategies are utilized by EFL Omani students. Accordingly, they can employ these strategies as part of their teaching practice inside the classroom. On the other hand, students can obtain benefits from such findings by using them in their daily classes to overcome the difficulty of learning new vocabulary. As for researchers, the results seem to agree with some previous studies and disagree with others. This contrast may lead other researchers to navigate the scope again in a different context with varied L1 backgrounds.

2. Literature Review

Language learning strategies are "special thoughts or behaviors that individuals use to help them understand, learn, or remember new information" ([14], p. 1). These language learning strategies are "procedures that learners use to understand, store, and comprehend new information and proficiencies" ([15], p. 9). Further, Oxford[16] defines language learning strategies as specific practices that students use to improve their language skills and increase their ease of use, speed, interest, automaticity, efficiency, and transferability to new situations. The term "vocabulary learning strategies" (VLSs) refers to students' understanding of the methods and approaches utilised to acquire vocabulary. These methods include the actions or steps students follow, such as (a) learning the definition of new words; (b) retaining them in long-term memory; (c) remembering them; and (d) using them verbally or in writing[2]. Consequently, building one's vocabulary is a crucial part of learning a language[17]. That is, the most crucial component of language proficiency is vocabulary; without it, it is impossible to communicate meaningfully or transmit the intended meaning. In this regard, Wilkins[18] asserts "Without grammar, very little could be expressed; without vocabulary, nothing could be expressed," suggesting that learners cannot carry on an effective conversation if they are only able to identify a word's syntax and morphology without considering its meaning. To put it briefly, speaking with others when lacking sufficient language might be challenging. Further, according to Gupta and MacWhinney[19] and Al-Shujairi et al.[13], learning new words in a second language is regarded as one of the most difficult processes in human growth. According to White, Graves, and Slater[20], L2 students with little vocabulary who are ready to begin their college studies may experience long-term consequences from this shortcoming, such as low academic accomplishment and a lower level of English proficiency. To put it another way, vocabulary is essential to language use, and learners who lack basic vocabulary knowledge may find it difficult to learn a second language[21].

Understanding how students acquire new and unfamiliar vocabulary, as well as the actions and steps they take to determine the meaning of unknown vocabulary, are examples of vocabulary learning strategies. As a result, language learning strategies are crucial because they help students become more proficient communicators, and more independent, practice their language skills outside of the classroom, and organise their learning[22]. The more vocabulary a student has, the more knowledge and understanding he/she will get from the lesson. To demonstrate, learners need broad vocabulary that can stand alone to succeed academically[23]. Without the application of learning strategies, this is not feasible. When using vocabulary learning strategies, students can quickly analyse how words relate to one another, what they imply, and how to employ them in various situations[24]. Although vocabulary significance is widely recognized, it has not received enough attention in the teaching of English to speakers of other languages, with a stronger emphasis on grammar. For instance, Folse[25] observes that vocabulary has been overlooked in language instruction while being "the most imperative element in languages," as learning a foreign or second language requires vocabulary knowledge, syntax, pronunciation, morphology, and reading.

Based on Oxford's[26] classical taxonomy of LLSs, Schmitt[2] designed his well-known taxonomy, which divides VLSs into five categories: determination, memory, social, cognitive, and metacognitive strategies. Facilitating students' storage and retrieval of new information are the goal of memory methods[27]. Using clusters of unrelated phrases and organizing words into categories like synonyms or common themes are two examples of memory techniques[13]. The study conducted by Kafipour, Yazdi, Soori, and Shokrpour[27] investigated the correlation between VLSs and the EFL vocabulary size of 238 university students in Iran. With a mean score of 3.01, they discovered that memory techniques were the most commonly employed type of VLS. Al-khasawneh[28] found a similar result in the Jordanian context when analyzing the different VLSs by undergraduate Jordanians at the Jordan University of Science and Technology. **Table 1** shows the five categories of VLSs and the question items related to each category.

In contrast, Ghouati[29] examined the VLSs of sixty Master students at the School of Arts and Humanities who were studying English at a Moroccan university and found that memory methods were among the least used VLSs for learning EFL. According to Komol and Sripetpun's[30] study on the VLSs used by Thai second-year university students in Thailand, it appears that EFL learners of diverse nationalities frequently use memory methods, but some studies have found contrasting results. These inconsistent findings

raise questions about the most and least frequent use of VLSs followed by learners in other contexts. As for cognitive methods, they are unrelated to mental thinking; instead, they address the mechanical components of vocabulary acquisition[31]. One of the most popular cognitive methods is repetition. Additional examples include underlining new terms in notes, creating lists of new words, writing new words down on flashcards, labelling tangible items in English, maintaining vocabulary notebooks, and writing new words several times.

Table 1. Schmitt's taxonomy.

Item No.	STRATEGY	Never	Seldom	Sometimes	Often	Always
DET 1	1. I analyze or guess the meaning of the word in terms of syntax (parts of speech = noun-verb-adjective)	1	2	3	4	5
DET 2	2. I analyze or guess the meaning from the first part of the word and the last part of the word (affixes - roots - suffix).	1	2	3	4	5
DET 3	3. I check for L1 cognate or a related meaning.	1	2	3	4	5
DET 4	4. I analyze the meaning through the available pictures or gestures.	1	2	3	4	5
DET 5	5. I guess the meaning from the textual context.	1	2	3	4	5
DET 6	6. I use a monolingual dictionary (English-English).	1	2	3	4	5
DET 7	7. I use a bilingual dictionary (English-Arabic).	1	2	3	4	5
DET 8	8. I write the new words and arrange them in alphabetical order (word lists).	1	2	3	4	5
DET 9	9. I use flashcards to write the meanings of new vocabulary.	1	2	3	4	5
SOC 1	10. I ask the lecturer for L1 translation.	1	2	3	4	5
SOC 2	11. I ask the lecturer for paraphrase or synonym of new word.	1	2	3	4	5
SOC 3	12. I ask the lecturer for a sentence including the new word.	1	2	3	4	5
SOC 4	13. I ask my classmates for the meaning.	1	2	3	4	5
SOC 5	14. I discover the new meaning through group work activity.	1	2	3	4	5
SOC 6	15. I study and practice meaning in a group.	1	2	3	4	5
SOC 7	16. The lecturer checks students flash cards or word lists for accuracy.	1	2	3	4	5
SOC 8	17. I interact with native speakers.	1	2	3	4	5
MEM 1	18. I connect the new words to a previous personal experience.	1	2	3	4	5
MEM 2	19. I connect the new words with other words or use semantic maps (kitchen = spoon, plate, refrigerator).	1	2	3	4	5
MEM 3	20. I associate the new word with its coordinates (words I know before that are phonetically similar to the new word).	1	2	3	4	5
MEM 4	21. I connect the new word with its synonyms and antonyms.	1	2	3	4	5
MEM 5	22. Image word form of the written word.	1	2	3	4	5
MEM 6	23. Image word 's meaning (illustration of the meaning of the new word).	1	2	3	4	5
MEM 7	24. I use the keyword method that if I want to memorize a word, I search for a word in my L1 that sounds similar to it.	1	2	3	4	5
MEM 8	25. Group words together to study them.	1	2	3	4	5
MEM 9	26. Study the spelling of the new word.	1	2	3	4	5
MEM 10	27. Say the new word aloud when studying.	1	2	3	4	5
MEM 11	28. Use physical action when learning the new word.	1	2	3	4	5
MEM 12	29. Study the new word with a pictorial representation of its meaning (on the street or at home).	1	2	3	4	5
MEM 13	30. Associate the new word with its coordinates (phonetically).	1	2	3	4	5
MEM 14	31. I make a table including the derivation of adjectives for the new word (use scales for gradable adjectives).	1	2	3	4	5
MEM 15	32. I use Peg method (associating a word with numbers).	1	2	3	4	5
MEM 16	33. I use Loci method (learning new words through the daily path).	1	2	3	4	5
MEM 17	34. Group words together alphabetically (spatially on a page).	1	2	3	4	5
MEM 18	35. Study the sound of the new word.	1	2	3	4	5
MEM 19	36. Groups words together within a storyline.	1	2	3	4	5
MEM 20	37. Use the new words in sentences.	1	2	3	4	5
MEM 21	38. Underline the initial letter of the new word to search for it later.	1	2	3	4	5

Table 1. *Cont.*

Item No.	STRATEGY	Never	Seldom	Sometimes	Often	Always
MEM 22	39. I store the new words on the computer or on the electronic dictionary.	1	2	3	4	5
MEM 23	40. Affixes, roots, or suffixes (remembering)	1	2	3	4	5
MEM 24	41. Parts of speech (remembering)	1	2	3	4	5
MEM 25	42. Paraphrase the word ‘s meaning	1	2	3	4	5
MEM 26	43. Use cognates in study	1	2	3	4	5
MEM 27	44. Learn the word of an idiom together	1	2	3	4	5
MEM 28	45. Use semantic features grids (I give a set of synonyms and antonyms for the new word).	1	2	3	4	5
COG 1	46. Verbal repetition (I repeat the word orally).	1	2	3	4	5
COG 2	47. Written repetition (I repeat the word in writing).	1	2	3	4	5
COG 3	48. Study the new words in lists.	1	2	3	4	5
COG 4	49. Put English labels on physical objects like putting the word (table) on the table.	1	2	3	4	5
COG 5	50. Keep a vocabulary notebook	1	2	3	4	5
COG 6	51. I use flashcards to learn new English words.	1	2	3	4	5
COG 7	52. Take notes in class	1	2	3	4	5
COG 8	53. Use the vocabulary section in the textbook.	1	2	3	4	5
COG 9	54. Listen to a tape of word lists	1	2	3	4	5
MET 1	55. Testing oneself with word lists	1	2	3	4	5
MET 2	56. Use English language media (Songs, movies, newscasts)	1	2	3	4	5
MET 3	57. Skip or pass new word	1	2	3	4	5
MET 4	58. Use spaced word practiced	1	2	3	4	5
MET 5	59. Continue to study the new words over time	1	2	3	4	5

Comparing memory methods and cognitive strategies, they are not that dissimilar. To study vocabulary, learners rely on mechanical methods and repetition rather than manipulating mental thinking. Taking notes, making word lists, and employing flashcards are examples of cognitive methods. Kafipour et al.[27] discovered that, with an associated mean score of 2.96, cognitive methods were the least used VLS among Iranian students. Besides, with a mean score of 2.68, AlKhasawneh[28] revealed that these VLSs were also the second least used by Jordanian students. With a percentage of 22.04% and a mean score of 3.30, respectively, Moroccan[29] and Chinese[32] EFL learners were shown to employ cognitive methods to a moderate extent. On the other hand, Komol and Sripetpun[30] demonstrated that Thai students employed these methods extensively, as seen by their mean score of 3.20. The ability of learners to locate learning opportunities, record those experiences, and then go back and review them is mirrored in metacognitive strategies. In other words, metacognitive methods encompass appraisal, decision-making, and monitoring of one’s progress. Additionally, they can help students identify effective vocabulary-learning techniques for picking up new terms[31]. Using English-language media, learning new words repeatedly, paying attention to English words when spoken, and skipping or passing new words are some specific examples.

Learners employ metacognitive strategies to monitor and regulate their learning. To gain as much exposure to language as possible, metacognitive strategies include reading books, watching movies, and conversing with native speakers. Other helpful metacognitive techniques include recognizing when to actively learn a new term and managing your time ever more effectively. While some research[27, 30, 32] reported a low frequency of usage, others[28, 29] have found a high frequency of use of metacognitive methods in learning new words. According to Kafipour et al.[27], acquiring new vocabulary is primarily accomplished by Iranian EFL learners through the use of metacognitive methods. In a similar vein, Lou[32] demonstrated that Chinese students (mean = 3.57) most commonly employed these strategies. Likewise, Komol and Sripetpun[30] discovered that Thai undergraduates (mean = 3.00) frequently employed these strategies. However, Ghouati[29] and Al-Khasawneh[28] found that metacognitive methods were the least utilized type of VSLs. Therefore, further research is required to evaluate the application of metacognitive VLSs by EFL Omani students in the Sultanate of Oman.

The studies related to vocabulary learning strategies have revealed inconsistent findings. For instance, in Shamsan et al.[33], the respondents indicated that they did not frequently employ strategies such as asking teachers, friends, and classmates. Instead, they utilized bilingual dictionaries, Google Translate, or guessed the meaning. More specifically, English major students employed VLSs more than non-major ones. In the Turkish context, Okyar[8] indicated that the frequency of VLS use was moderate. Additionally, an evaluation of the scale's sub-dimensions revealed that cognitive, memory, compensation, and social strategies were employed at a moderate frequency, whereas affective strategies and metacognitive methods were used at a high frequency. When VLSs employment was investigated among both males and females, a noteworthy difference was observed, with female learners achieving a higher overall mean score than male learners. Furthermore, female learners revealed more usages of compensation, cognitive, memory, and affective strategies. Nevertheless, there were no statistically remarkable gender differences in the frequency with which social strategies were used. Further, Abdul Rahman and Nasri[34] showed that memory, note-taking, and guessing using linguistic clues were the three most popular strategies, whereas guessing using previous knowledge and activation were the least popular ones. In the Indonesian context, Aisyah et al.[35] showed that the most frequently used Vocabulary Learning Strategy (VLS) among male students was metacognitive strategies, with a usage rate of 63%, whereas memory strategies were the least utilized at 47%. Similarly, female students primarily relied on metacognitive strategies (72%), whereas determination strategies were the least employed (54%). Furthermore, the results indicated no statistically significant differences between male and female students in their use of the five strategy categories or individual VLSs. In another study, the results and qualitative data revealed that before training, students primarily depended on dictionary-based strategies and maintaining a vocabulary notebook for learning new words. However, after training, there was a significant shift toward greater use of guessing techniques, keyword strategies, and semantic mapping. These findings highlight the positive impact of VLS training in improving vocabulary acquisition among Grade 11 students[36]. These varied results raise questions about the vocabulary learning strategies followed by EFL Omani students. Therefore, this study provides insights into the diverse patterns of vocabulary learning strategies employed by EFL Omani students at a public university in the Sultanate of Oman. In this study, the answers to two primary questions were sought:

1) What are the vocabulary learning strategies used by EFL Omani students?
2) To what extent do age, gender, and levels of study affect vocabulary learning strategies followed by EFL Omani students?

3. Materials and Methods

A quantitative method helps ascertain respondents' opinions about the language learning techniques employed by university students using the questionnaire. Further, a survey format helps researchers understand the opinions of specific respondents.

3.1. Data Collection

In this study, a total of 195 Omani students responded to the questionnaire after it was initially distributed randomly to 500 EFL Omani students. These 500 students were from all four levels of study to ensure a representative distribution. A stratified sampling method was used to achieve this. Each level of study consists of multiple classrooms, with each classroom containing approximately 25 students—13 male students and 12 female students. To maintain proportional representation across all levels, the questionnaire was distributed online to five classrooms from each level, resulting in a total of 20 selected classrooms (5 classrooms × 4 levels). This approach ensured that the sample was diverse and representative of the student population, covering all study levels while maintaining a balance between male and female students.

The students were informed of the purpose of the study and that their responses would be used for academic and research goals. Some of the question items were explained and enhanced by examples. The study is based on a modified version of Schmitt's[2] taxonomy-based vocabulary learning strategies. There were two sections in the questionnaire. The first section of the questionnaire was comprised of the respondents' demographic data, including age, gender, and levels of study. The second portion of the questionnaire included 59 items designed to measure respondents' use of vocabulary

learning strategies. A 5-point Likert scale, with 1 representing "never" and 5 representing "always", was used to rate the 59 items. The five main types of vocabulary learning strategies—determination, social, memory, cognitive, and metacognitive—were subcategorized into the 59 questions. The design was created in Google Forms. The students were told that the questionnaire would be kept fully private and would only be used for research. Additionally, they were told that there was no right or incorrect response when filling out the questionnaire. To prevent biased responses, the respondents were not obliged to write their names on the questionnaire. To facilitate the respondents' feedback, the questionnaire was translated into Arabic.

3.2. Data Analysis

SPSS version 29 was used for data analysis. Descriptive statistics, including means and standard deviations, were employed to address the first two research questions. One-way ANOVA was used to analyze the effect of levels of study (having more than two categories) on VLSs. The independent sample T-test was used to examine the potential influence of age and gender (having two categories) on VLSs. Utilizing Oxford's[26, 37] rating system, strategy users are classified as high, medium, and low. Scores of 1–2.4 indicated low strategy use, scores of 2.4–3.5 indicated medium strategy use, and scores of 3.5–5 indicated strong strategy use under this scoring method. The mean score for the total utilization of strategies as well as the scores for each strategy category were determined using this scoring system. **Figure 1** shows the five steps of conducting the study.

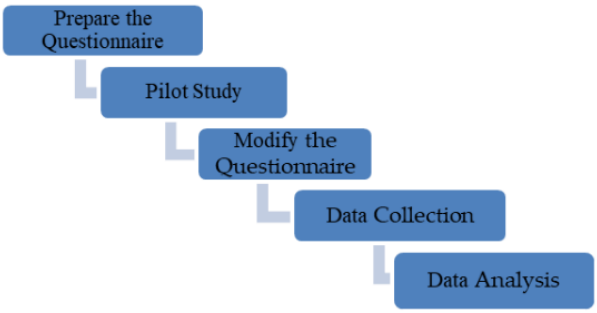

Figure 1. Flowchart of the study procedure.

3.3. Sampling

For this study, a total of 195 students participated in the study. These students were enrolled in the Preparatory Studies Center's English Unit, which is composed of four discrete, progressively more challenging levels of study. Of these 195 students, 143, or 73%, were between the ages of 17–19, while 52, or 26%, were between the ages of 20–22. Looking at gender, a total of 109 students, or 56% were male students, while the remainder of the students were female ones. Taking note of the educational composition of students in the sample, 20% originated from Level 1, 30% from Level 2, 23% from Level 3, and 26% from Level 4. The level of the study refers to the four semesters of the English Foundation Program which extends for two years; each level lasts for one academic semester. These arranged participation rates best reflect the prevailing composition and divisions of the population within each educational level, and the gender balance of men to women, at the chosen university. **Table 2** illustrates the demographic data of the respondents.

Table 2. Demographic data of the respondents.

Age			Gender			Level of Study		
	N	%		N	%		N	%
17–19	143	73.3%	Male	109	55.9	Level one	39	20.0%
20–22	52	26.7%	Female	86	44.1	Level two	59	30.3%
						Level three	46	23.6%
						Level four	51	26.2%

3.4. Research Instrument Validity

Utilising an SPSS version 29, the reliability statistics of the main sampling, including 195 EFL Omani students based on Cronbach's Alpha showed a correlation of 0.957 which is higher than good. **Table 3** shows the reliability statistics of the main study.

Table 3. Reliability Statistics (195 students).

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.957	0.958	59

It is important to highlight that 50 respondents participated in a pilot study to verify the validity of the questionnaire using SPSS version 29. The Cronbach's Alpha revealed a correlation of 0.945 which is higher than good, thus surpassing the minimum requirement.

In this regard, DeVellis [38] stated that to achieve good reliability of the questionnaire, the alpha (α) is at least equal to 0.70 ($\alpha \geq 0.70$). In the current study, the reliability value was found to be 0.945 ($\alpha = 0.945$), which is much higher than 0.70. Consequently, the questionnaire employed was reliable and could be used in the main study. **Table 4** reveals the reliability statistics of the pilot study.

Table 4. Reliability statistics (A pilot study: 50 students).

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.945	0.945	59

The pilot study could help the researchers in modifying some questionnaire items. Since some strategies seem strange and students do not understand them, thereby affecting their response, examples were provided next to each strange strategy to make them more comprehensible.

All the respondents were informed about the purpose of the study, and their participation was voluntary. They were assured of confidentiality and anonymity regarding the matter in which their responses were handled. To maintain anonymity, the collected responses were coded, and to ensure privacy and promote the integrity of the data, personal identifiers were removed from all data sets.

4. Results

The results in this section address the two research questions related to the most and least vocabulary learning strategies as well as their frequency of use based on age, gender, and levels of study. In **Table 5**, the means, frequencies, and standard deviations of the 59 question items are presented.

Table 5. Means, frequency, and standard deviations of 59 question items.

Category	Questionnaire Items	Mean	Std. Deviation	N
Determination (9 question items)	1. I analyze or guess the meaning of the word in terms of syntax (parts of speech= noun-verb-adjective)	3.25	0.949	195
	2. I analyze or guess the meaning from the first part of the word and the last part of the word (affixes - roots - suffix).	3.11	1.128	195
	3. I check for L1 cognate or a related meaning.	3.22	1.177	195
	4. I analyze the meaning through the available pictures or gestures.	3.76	1.111	195
	5. I guess the meaning from the textual context.	3.95	0.996	195
	6. I use a monolingual dictionary (English-English).	2.76	1.038	195
	7. I use a bilingual dictionary (English-Arabic).	3.55	1.180	195
	8. I write the new words and arrange them in alphabetical order (word lists).	2.72	1.178	195
	9. I use flashcards to write the meanings of new vocabulary.	2.78	1.146	195
Social (8 question items)	10. I ask the lecturer for L1 translation.	3.08	1.052	195
	11. I ask the lecturer for paraphrase or synonym of new word.	3.11	1.037	195
	12. I ask the lecturer for a sentence including the new word.	3.04	1.105	195
	13. I ask my classmates for the meaning.	3.49	1.128	195
	14. I discover the new meaning through group work activity.	3.27	1.197	195
	15. I study and practice meaning in a group.	3.41	1.173	195
	16. The lecturer checks students flash cards or word lists for accuracy.	2.78	1.208	195
	17. I interact with native speakers.	3.39	1.132	195

Table 5. *Cont.*

Category	Questionnaire Items	Mean	Std. Deviation	N
Memory (27 question items)	18. I connect the new words to a previous personal experience.	3.29	1.158	195
	19. I connect the new words with other words or use semantic maps (kitchen = spoon, plate, refrigerator).	3.19	1.132	195
	20. I associate the new word with its coordinates (words I know before that are phonetically similar to the new word).	3.25	1.100	195
	21. I connect the new word with its synonyms and antonyms.	3.27	1.036	195
	22. Image word form of the written word.	3.23	1.159	195
	23. Image word's meaning (illustration of the meaning of the new word).	3.22	1.160	195
	24. I use the keyword method that if I want to memorize a word, I search for a word in my L1 that sounds similar to it.	2.99	1.173	195
	25. Group words together to study them.	3.45	1.113	195
	26. Study the spelling of the new word.	3.48	1.062	195
	27. Say the new word aloud when studying.	3.33	1.195	195
	28. Use physical action when learning the new word.	3.04	1.259	195
	29. Study the new word with a pictorial representation of its meaning (on the street or at home).	3.37	1.097	195
	30. Associate the new word with its coordinates (phonetically).	3.47	1.090	195
	31. I make a table including the derivation of adjectives for the new word (use scales for gradable adjectives).	2.91	1.145	195
	32. I use Peg method (associating a word with numbers).	2.76	1.259	195
	33. I use Loci method (learning new words through the daily path).	2.67	1.229	195
	34. Group words together alphabetically (spatially on a page).	2.84	1.274	195
	35. Study the sound of the new word.	3.40	1.132	195
	36. Groups words together within a storyline.	2.63	1.204	195
	37. Use the new words in sentences.	3.18	1.141	195
	38. Underline the initial letter of the new word to search for it later.	2.96	1.266	195
	39. I store the new words on the computer or on the electronic dictionary.	2.87	1.188	195
	40. Affixes, roots, or suffixes (remembering)	3.03	1.157	195
	41. Parts of speech (remembering)	3.04	1.166	195
	42. Paraphrase the word 's meaning.	3.26	1.148	195
	43. Use cognates in study.	3.25	1.067	195
	44. Learn the word of an idiom together	2.92	1.139	195
	45. Use semantic features grids (I give a set of synonyms and antonyms for the new word).	3.10	1.103	195
Cognitive (9 Question items)	46. Verbal repetition (I repeat the word orally).	3.67	1.106	195
	47. Written repetition (I repeat the word in writing).	3.49	1.137	195
	48. Study the new words in lists.	3.13	1.145	195
	49. Put English labels on physical objects like putting the word (table) on the table.	2.71	1.264	195
	50. Keep a vocabulary notebook	3.21	1.236	195
	51. I use flashcards to learn new English words.	2.77	1.112	195
	52. Take notes in class	3.27	1.177	195
	53. Use the vocabulary section in the textbook.	3.34	1.139	195
	54. Listen to a tape of word lists	3.12	1.110	195
Metacognitive (5Question items)	55. Testing oneself with word lists	3.09	1.157	195
	56. Use English language media (Songs, movies, newscasts)	3.22	1.160	195
	57. Skip or pass new word	3.39	1.057	195
	58. Use spaced word practiced	3.27	1.071	195
	59. Continue to study the new words over time	3.35	1.104	195
	Determination	3.23	0.612	195
	Social	3.20	0.772	195
	Memory	3.12	0.694	195
	Cognitive	3.19	0.762	195
	Metacognitive	3.26	0.844	195

Based on **Table 5**, the lowest associated mean is attributed to memory strategy with a mean score (3.12), whereas the highest mean is related to metacognitive strategy with a mean score (3.26). Regarding the determination strategy (3.23), Q6_DET "use a monolingual dictionary" (English-English), Q8_DET "write the new words and arrange them in alphabetical order (word lists)", and Q9_DET "I use flashcards to write the meanings of new vocabulary had the lowest mean". In contrast, Q1_DET "I analyse or guess the meaning of the word in terms of syntax," Q2_DET2 "I analyse or guess the meaning from the first part of the word and the last part of the word (affixes - roots - suffix)," Q3_DET "check for L1 cognate or a related meaning," Q4_DET "analyse the meaning through the available pictures or gestures," Q5_DET "guess the meaning from the textual context," and Q7_DET "use a bilingual dictionary" had the highest mean.

Compared with other VLSs, the memory strategy had the lowest associated mean (3.12). On one hand, Q24_MEM "search for a word in my L1 that sounds similar to it," Q31_MEM "make a table including the derivation of adjectives for the new word," Q32_MEM "I use Peg method (associating a word with numbers," Q33_MEM "use Loci method," Q34_MEM "Group words together alphabetically," Q36_MEM "Groups words together within a storyline," Q38_MEM "Underline the initial letter of the new word to search for it later," Q39_MEM "I store the new words on the computer or on the electronic dictionary," Q44_MEM "Learn the word of an idiom together" had the lowest mean. On the other hand, Q18_MEM "connect the new words to previous personal experience," Q19_MEM "use semantic maps," Q20_MEM "associate the new word with its coordinates," Q21_MEM "connect the new word with its synonyms and antonyms," Q22_MEM "Image word form of the written word," Q23_MEM "Image word's meaning (illustration of the meaning of the new word," Q25_MEM "Group words together to study them," Q26_MEM "Study the spelling of the new word," Q27_MEM "Say the new word aloud when studying," Q28_MEM "Use physical action when learning the new word," Q29_MEM "Study the new word with a pictorial representation of its meaning," Q30_MEM "Associate the new word with its coordinates," Q35_MEM "Study the sound of the new word," Q37_MEM "Use the new words in sentences," Q40_MEM "Affixes, roots, or suffixes (remembering)," Q41_MEM "Parts of speech (remembering)," Q42_MEM "Paraphrase the word's meaning," Q43_MEM "Use cognates in study," and Q45_MEM "Use semantic features grids" had the highest mean.

Concerning the cognitive strategy (3.19), Q49_COG "Put English labels on physical objects" and Q51_COG "use flashcards to learn new English words" had the lowest mean. In contrast, Q46_COG "Verbal repetition," Q47_COG "Written repetition," Q48_COG "Study the new words in lists," Q50_COG "Keep a vocabulary notebook," Q52_COG "Take notes in class," Q53_COG "Use the vocabulary section in the textbook," Q54_COG "Listen to tape of word lists" had the highest mean. As for the metacognitive strategy, it had the highest mean (3.26) compared with other VLSs, whereby all question items had a medium use of frequency with a mean that is approximately similar. **Table 6** shows the descriptive statistics of the ascending means.

In summary, metacognitive strategies were the most frequently used, whereas memory strategies were the least preferred. Determination and cognitive strategies had varying usage patterns with some items being used more frequently than others, indicating a diverse approach to vocabulary learning. **Table 6** shows the ascending means of the question items.

Table 6. Descriptive statistics of ascending means of VLSs question items.

	Question Items	N	Sum	Mean	Std. Deviation
Q36_MEM	36. Groups words together within a storyline.	195	513	2.63	1.204
Q33_MEM	33. I use Loci method (learning new words through the daily path).	195	521	2.67	1.229
Q49_COG	49. Put English labels on physical objects like putting the word (table) on the table.	195	529	2.71	1.264
Q8_DET	8. I write the new words and arrange them in alphabetical order (word lists).	195	531	2.72	1.178
Q32_MEM	32. I use Peg method (associating a word with numbers).	195	538	2.76	1.259
Q6_DET	6. I use a monolingual dictionary (English-English).	195	539	2.76	1.038
Q51_COG	51. I use flashcards to learn new English words.	195	541	2.77	1.112

Table 6. *Cont.*

	Question Items	N	Sum	Mean	Std. Deviation
Q9_DET	9. I use flashcards to write the meanings of new vocabulary.	195	543	2.78	1.146
Q16_SOC	16. The lecturer checks students flash cards or word lists for accuracy.	195	543	2.78	1.208
Q34_MEM	34. Group words together alphabetically (spatially on a page).	195	553	2.84	1.274
Q39_MEM	39. I store the new words on the computer or on the electronic dictionary.	195	560	2.87	1.188
Q31_MEM	31. I make a table including the derivation of adjectives for the new word (use scales for gradable adjectives).	195	567	2.91	1.145
Q44_MEM	44. Learn the word of an idiom together	195	570	2.92	1.139
Q38_MEM	38. Underline the initial letter of the new word to search for it later.	195	578	2.96	1.266
Q24_MEM	24. I use the keyword method that if I want to memorize a word, I search for a word in my L1 that sounds similar to it.	195	584	2.99	1.173
Q40_MEM	40. Affixes, roots, or suffixes (remembering)	195	591	3.03	1.157
Q12_SCO	12. I ask the lecturer for a sentence including the new word.	195	592	3.04	1.105
Q41_MEM	41. Parts of speech (remembering)	195	593	3.04	1.166
Q28_MEM	28. Use physical action when learning the new word.	195	593	3.04	1.259
Q10_SOC	10. I ask the lecturer for L1 translation.	195	601	3.08	1.052
Q55_MET	55. Testing oneself with word lists	195	602	3.09	1.157
Q45_MEM	45. Use semantic features grids (I give a set of synonyms and antonyms for the new word).	195	605	3.10	1.103
Q2_DET	2. I analyse or guess the meaning from the first part of the word and the last part of the word (affixes - roots - suffix).	195	606	3.11	1.128
Q11_SOC	11. I ask the lecturer for paraphrase or synonym of a new word.	195	606	3.11	1.037
Q54_COG	54. Listen to a tape of word lists	195	609	3.12	1.110
Q48_COG	48. Study the new words in lists.	195	611	3.13	1.145
Q37_MEM	37. Use the new words in sentences.	195	620	3.18	1.141
Q19_MEM	19. I connect the new words with other words or use semantic maps (kitchen = spoon, plate, refrigerator).	195	623	3.19	1.132
Q50_COG	50. Keep a vocabulary notebook	195	626	3.21	1.236
Q3_DET	3. I check for L1 cognate or a related meaning.	195	627	3.22	1.177
Q23_MEM	23. Image word's meaning (illustration of the meaning of the new word).	195	627	3.22	1.160
Q56_MET	56. Use English language media (Songs, movies, newscasts)	195	627	3.22	1.160
Q22_MEM	22. Image word form of the written word.	195	630	3.23	1.159
Q1_DET	1. I analyse or guess the meaning of the word in terms of syntax (parts of speech = noun-verb-adjective)	195	634	3.25	.949
Q20_MEM	20. I associate the new word with its coordinates (words I know before that are phonetically similar to the new word).	195	634	3.25	1.100
Q43_MEM	43. Use cognates in studying.	195	634	3.25	1.067
Q42_MEM	42. Paraphrase the word's meaning	195	636	3.26	1.148
Q14_SOC	14. I discover the new meaning through group work activity.	195	637	3.27	1.197
Q21_MEM	21. I connect the new word with its synonyms and antonyms.	195	637	3.27	1.036
Q52_COG	52. Take notes in class	195	638	3.27	1.177
Q58_MET	58. Use spaced word practiced	195	638	3.27	1.071
Q18_MEM	18. I connect the new words to a previous personal experience.	195	642	3.29	1.158
Q27_MEM	27. Say the new word aloud when studying.	195	649	3.33	1.195
Q53_COG	53. Use the vocabulary section in the textbook.	195	651	3.34	1.139
Q59_MET	59. Continue to study the new words over time	195	654	3.35	1.104
Q29_MEM	29. Study the new word with a pictorial representation of its meaning (on the street or at home).	195	658	3.37	1.097
Q57_MET	57. Skip or pass new word	195	662	3.39	1.057
Q17_SOC	17. I interact with native speakers.	195	662	3.39	1.132
Q35_MEM	35. Study the sound of the new word.	195	663	3.40	1.132
Q15_SOC	15. I study and practice meaning in a group.	195	664	3.41	1.173
Q25_MEM	25. Group words together to study them.	195	673	3.45	1.113
Q30_MEM	30. Associate the new word with its coordinates (phonetically).	195	677	3.47	1.090

Table 6. *Cont.*

	Question Items	N	Sum	Mean	Std. Deviation
Q26_MEM	26. Study the spelling of the new word.	195	678	3.48	1.062
Q13_SOC	13. I ask my classmates for the meaning.	195	680	3.49	1.128
Q47_COG	47. Written repetition (I repeat the word in writing).	195	681	3.49	1.137
Q7_DET	7. I use a bilingual dictionary (English-Arabic).	195	693	3.55	1.180
Q46_COG	46. Verbal repetition (I repeat the word orally).	195	715	3.67	1.106
Q4_DET	4. I analyse the meaning through the available pictures or gestures.	195	733	3.76	1.111
Q5_DET	5. I guess the meaning from the textual context.	195	771	3.95	0.996
	Valid N (listwise)	195			

Based on **Table 6**, the mean of all items is displayed, showing that no low frequency was revealed. This implies that all question items ranged from medium frequency to high frequency. Fifty-five question items had a medium-frequency use, whereas only 4 question items had a high-frequency use (Q7_DET "I use a bilingual dictionary," Q46_COG "Verbal repetition," Q4_DET "I analyse the meaning through the available pictures or gestures," Q5_DET "I guess the meaning from the textual context," with the following means: 3.55, 3.67, 3.76, and 3.95, respectively. Question items with a medium frequency included Q36_MEM "Groups words together within a storyline," Q33_MEM "I use Loci method," Q49_COG "Put English labels on physical objects," Q8_DET "write the new words and arrange them in alphabetical order," Q32_MEM "use Peg method," Q6_DET "use a monolingual dictionary," Q51_COG "use flashcards to learn new English words," Q9_DET "use flashcards to write the meanings of new vocabulary," Q16_SOC "The lecturer checks students' flash cards or word lists for accuracy," and Q34_MEM "Group words together alphabetically,''. Ten question items occupied the lowest mean including memory strategies, cognitive strategies, and determination strategies, whereas none of the question items related to social and metacognitive strategies achieved low means. On the other hand, the top question items with high-frequency use included Q7_DET "use a bilingual dictionary," Q46_COG "Verbal repetition," Q4_DET "analyse the meaning through the available pictures or gestures," and Q5_DET "guess the meaning from the textual context''; three question items belong to the determination strategy, whereas only one question item belongs to the cognitive strategy. **Table 7** clarifies the means and standard deviations of the question items based on age. In summary, the majority of the items fell within the medium-frequency range, with a small number of items—mainly related to determination and cognitive strategies—showing high-frequency usage. Social and metacognitive strategies tended to be more consistently used. **Table 7** shows means and standard deviations based on age.

Based on **Table 7**, notably, a difference was found in terms of mean scores, whereby the age group 20–22 had a higher mean score (3.23) compared with the age group 17–19 who had a (3.18) mean score. The frequency of use of some question items includes one question item belonging to the determination strategy, two question items belonging to the social strategy, three question items belonging to the memory strategy, one question item belonging to the cognitive strategy, and one question item belonging to the metacognitive strategy. In Q7_DET "I use a bilingual dictionary," a difference was found, whereby a high frequency of use was used by the 17–19 age group compared with a medium frequency of use utilised by the 20–22 age group. In contrast, in Q14_SOC "I discover the new meaning through group work activity" and Q15_SOC "I study and practice meaning in a group," another difference was found, whereby a high frequency of use was used by the 20-22 age group, compared with a medium frequency of use by the 17–19 age group. In Q24_MEM "I search for a word in my L1 that sounds similar to it" and Q30_MEM "Associate the new word with its coordinates (phonetically)," a high frequency of use was found among the age group 17–19 compared with a medium frequency of use among the 20–22 age group. In contrast, for Q26_MEM, a high frequency was identified among the age group 20–22 compared with a medium frequency of use by 17–19 age group. As for Q47_COG "Written repetition" and Q59_MET "Continue to study the new words over time," a medium frequency of use was identified among the 17–19 age group, compared with a high frequency of use among the 20–22 age group. In general, no significant difference was found in the main five strategies of vocabulary learning, whereby all means

revealed a medium frequency of use. **Table 8** shows the means and standard deviations of the 59 questions based on gender. Overall, while there were some differences in the frequency of individual strategy items, no significant differences were found across the five main categories of vocabulary learning strategies. All items generally reflected medium-frequency usage among both age groups.

Table 8 shows the findings related to the P-value and Eta Squared of the effect of age on VLSs among EFL Omani students.

Table 7. Means and standard deviations based on age.

Category	Age	N	Mean	Std. Deviation	Std. Error Mean
Q7_DET	17-18-19	143	3.60	1.170	0.098
	20-21-22	52	3.42	1.210	0.168
Q14_SOC	17-18-19	143	3.17	1.171	0.098
	20-21-22	52	3.52	1.244	0.173
Q15_SOC	17-18-19	143	3.30	1.187	0.099
	20-21-22	52	3.69	1.094	0.152
Q24_MEM	17-18-19	143	2.96	1.198	0.100
	20-21-22	52	3.10	1.107	0.154
Q26_MEM	17-18-19	143	3.45	1.124	0.094
	20-21-22	52	3.56	0.873	0.121
Q30_MEM	17-18-19	143	3.50	1.106	0.093
	20-21-22	52	3.40	1.053	0.146
Q47_COG	17-18-19	143	3.48	1.180	0.099
	20-21-22	52	3.54	1.019	0.141
Q59_MET	17-18-19	143	3.30	1.114	0.093
	20-21-22	52	3.50	1.076	0.149
Determination	17-18-19	143	3.24	0.641	0.054
	20-21-22	52	3.22	0.530	0.073
Social	17-18-19	143	3.17	0.789	0.066
	20-21-22	52	3.27	0.722	0.100
Memory	17-18-19	143	3.11	0.731	0.061
	20-21-22	52	3.15	0.587	0.081
Cognitive	17-18-19	143	3.17	0.816	0.068
	20-21-22	52	3.24	0.595	0.083
Metacognitive	17-18-19	143	3.25	0.870	0.073
	20-21-22	52	3.31	0.778	0.108

Table 8. P-value and Eta Squared of the effect of age on VLSs Among EFL Omani students.

Strategy	F-Value	p-Value (Sig.)	Interpretation	Eta	Eta Squared	Effect Size Interpretation
Determination	0.068	0.795	Not significant	0.019	0.000	No effect
Social	0.733	0.393	Not significant	0.062	0.004	Very small effect
Memory	0.141	0.708	Not significant	0.027	0.001	No effect
Cognitive	0.279	0.598	Not significant	0.038	0.001	No effect
Metacognitive	0.184	0.669	Not significant	0.031	0.001	No effect

Since all p-values exceed 0.05, age does not have a statistically significant influence on any vocabulary learning strategies. Among the strategies, the Social strategy has the highest F-value (0.733), but it remains far from statistically significant. Eta squared values, which measure the proportion of variance explained by age, show that the Social strategy has the largest effect size (0.004); however, this still represents only a very small effect. All other strategies have negligible effect sizes (≤0.001), confirming that age plays no meaningful role. The ANOVA results further support this conclusion, showing no statistically significant differences between the two age groups. The negligible effect sizes (Eta squared) indicate that age accounts for almost none of the variation in strategy use. Overall, age does not significantly affect vocabulary learning strategies. Metacognitive strategies emerge as the most commonly used, reflected in the

highest mean score (3.26 across all students). Although older students (20–22) report slightly higher use of Metacognitive strategies (3.31 vs. 3.25), this difference is not statistically significant. In contrast, Memory strategies are the least used, suggesting that students may favor other approaches, such as Determination or Social strategies, over pure memorization. Among all strategies, the Social strategy exhibits the largest age-related difference, with older students reporting slightly higher use (3.27 vs. 3.17). However, ANOVA and Eta squared results confirm that this difference remains too small to be meaningful.

Table 9 shows the means and standard deviations of the findings related to the relationship between gender and VLSs employed by EFL Omani students.

Table 9 shows notable differences between male and female Omani students; female students had a higher mean score compared with male students in all VLSs. As for female Omani students, the mean scores in Determination, Social, Memory, Cognitive, and Metacognitive were 3.36, 3.23, 3.21, 3.38, and 3.47, respectively. In contrast, the mean scores for male Omani students in Determination, Social, Memory, Cognitive, and Metacognitive were 3.13, 3.17, 3.05, 3.04, and 3.10, respectively.

Regarding the mean scores of some question items individually, remarkably, these question items had a higher frequency of use among female Omani students, compared with a medium frequency of use among male Omani students. These questions items are Q7-DET "use a bilingual dictionary," Q13-SOC "I ask my classmates for the meaning," Q15-SOC "I study and practice meaning in a group," Q25-MEM "Group words together to study them," Q26-MEM "Study the spelling of the new word," Q27-MEM "Say the new word aloud when studying," Q29-MEM "Study the new word with a pictorial representation of its meaning," Q30-MEM "Associate the new word with its coordinates (phonetically)," Q35-MEM "Study the sound of the new word," Q46-COG "Verbal repetition," Q47-COG "Written repetition," Q50-COG "Keep a vocabulary notebook," Q53-COG "Use the vocabulary section in the textbook," Q56-MET "Use English language media," Q57-MET "Skip or pass new word," and Q59-MET "Continue to study the new words over time." In **Table 9** below, means and significant differences of the VLSs based on the level of study are illustrated. In general, female students showed a higher frequency of using vocabulary learning strategies compared to their male counterparts across various categories. Females scored higher than males in all five vocabulary learning strategies. The largest gender differences are in Cognitive and Metacognitive strategies, where females scored 3.38 and 3.47, respectively, compared to males' 3.04 and 3.10. In contrast, the smallest difference is in Social strategy, where males and females have nearly similar means (3.17 vs. 3.23).

Table 9. Means and standard deviations based on gender.

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Q7_DET	Male	109	3.38	1.216	0.116
	Female	86	3.78	1.100	0.119
Q13_SOC	Male	109	3.36	1.093	0.105
	Female	86	3.65	1.156	0.125
Q15_SOC	Male	109	3.33	1.131	0.108
	Female	86	3.50	1.225	0.132
Q25_MEM	Male	109	3.28	1.072	0.103
	Female	86	3.66	1.134	0.122
Q26_MEM	Male	109	3.36	1.023	0.098
	Female	86	3.63	1.096	0.118
Q27_MEM	Male	109	3.05	1.150	0.110
	Female	86	3.69	1.161	0.125
Q29_MEM	Male	109	3.19	1.101	0.105
	Female	86	3.60	1.055	0.114
Q30_MEM	Male	109	3.34	1.132	0.108
	Female	86	3.64	1.016	0.110
Q35_MEM	Male	109	3.26	1.150	0.110
	Female	86	3.58	1.090	0.118
Q46_COG	Male	109	3.45	1.142	0.109
	Female	86	3.94	0.998	0.108

Table 9. *Cont.*

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Q47_COG	Male	109	3.27	1.094	0.105
	Female	86	3.78	1.131	0.122
Q50_COG	Male	109	2.90	1.217	0.117
	Female	86	3.60	1.151	0.124
Q53_COG	Male	109	3.12	1.112	0.106
	Female	86	3.62	1.118	0.121
Q56_MET	Male	109	2.98	1.130	0.108
	Female	86	3.51	1.135	0.122
Q57_MET	Male	109	3.14	1.058	0.101
	Female	86	3.72	0.966	0.104
Q59_MET	Male	109	3.21	1.155	0.111
	Female	86	3.53	1.014	0.109
Determination	Male	109	3.13	0.602	0.058
	Female	86	3.36	0.604	0.065
Social	Male	109	3.17	0.744	0.071
	Female	86	3.23	0.808	0.087
Memory	Male	109	3.05	0.691	0.066
	Female	86	3.21	0.693	0.075
Cognitive	Male	109	3.04	0.755	0.072
	Female	86	3.38	0.731	0.079
Metacognitive	Male	109	3.10	0.830	0.080
	Female	86	3.47	0.820	0.088

Table 10 reveals the findings related to the P-value and Eta Squared of the effect of gender on VLSs among EFL Omani students.

Females outperformed males in all five vocabulary learning strategies, with the most pronounced gender differences observed in Cognitive and Metacognitive strategies. Females scored 3.38 and 3.47 in these strategies, respectively, compared to males' 3.04 and 3.10. In contrast, the smallest gender difference appears in the Social strategy, where males and females have nearly identical mean scores (3.17 vs. 3.23). Statistical analysis reveals that gender significantly influences the use of Determination, Cognitive, and Metacognitive strategies ($p < 0.05$). However, no significant differences were found in Social and Memory strategies, indicating that both genders use these strategies at comparable levels. Effect size analysis further supports these findings. Cognitive (0.050) and Metacognitive (0.049) strategies exhibit the largest effect sizes, suggesting that gender has a moderate influence on their use. Meanwhile, the Social strategy has the smallest effect size (0.001), confirming that gender plays no meaningful role in its adoption.

Table 11 shows the means and significant differences related to the effect of levels of study on VLSs utilised by EFL Omani students.

Table 10. P-value and Eta Squared of the effect of gender on VLSs Among EFL Omani students.

Strategy	F-Value	p-Value (Sig.)	Significance	Eta	Eta Squared	Effect Size Interpretation
Determination	6.829	0.010	Significant ($p < 0.05$)	0.185	0.034	Small to moderate effect
Social	0.228	0.633	Not significant	0.034	0.001	No effect
Memory	2.395	0.123	Not significant	0.111	0.012	Small effect
Cognitive	10.259	0.002	Significant ($p < 0.05$)	0.225	0.050	Moderate effect
Metacognitive	9.934	0.002	Significant ($p < 0.05$)	0.221	0.049	Moderate effect

To investigate the effect of the level of study on vocabulary learning strategies, One-way ANOVA was utilised. Among the 59 question items, only two question items (Q37_MEM "Use the new words in sentences," and Q59_MET "Continue to study the new words over time") were found to have a significant difference that is below

(0.05). However, all other question items had an insignificant difference that is above (0.05). The overall significant difference of the five main vocabulary learning strategies was above 0.005. This implies that the level of study is not statistically significant to the use of vocabulary learning strategies. In other words, the overall analysis of the five main vocabulary learning strategies showed no statistically significant difference ($p > 0.05$), suggesting that the level of study does not significantly influence the selection or frequency of use of vocabulary learning strategies.

Table 11. Means and significance differences of VLSs based on the level of study.

		Sum of Squares	df	Mean Square	F	Sig.
Q37_MEM	Between Groups	14.674	3	4.891	3.925	0.010
	Within Groups	238.044	191	1.246		
	Total	252.718	194			
Q59_MET	Between Groups	9.938	3	3.313	2.792	0.042
	Within Groups	226.646	191	1.187		
	Total	236.585	194			
Determination	Between Groups	0.111	3	0.037	0.098	0.961
	Within Groups	72.500	191	0.380		
	Total	72.611	194			
Social	Between Groups	0.271	3	0.090	0.150	0.930
	Within Groups	115.228	191	0.603		
	Total	115.499	194			
Memory	Between Groups	0.764	3	0.255	0.525	0.666
	Within Groups	92.735	191	0.486		
	Total	93.499	194			
Cognitive	Between Groups	1.054	3	0.351	0.601	0.615
	Within Groups	111.626	191	0.584		
	Total	112.680	194			
Metacognitive	Between Groups	4.465	3	1.488	2.124	0.099
	Within Groups	133.880	191	0.701		
	Total	138.346	194			

The mean scores for all strategies are relatively similar across levels, indicating only minor variations in strategy use. However, some variations are observed. In Metacognitive Strategies, Level 4 students reported the highest mean score (3.43), suggesting a greater reliance on higher-order thinking and self-regulation. In Memory Strategies, Level 4 students also had a slightly higher mean score (3.21), implying increased use of memorization techniques over time.

An analysis of variance (ANOVA) was conducted to examine whether the study level significantly impacts vocabulary learning strategies. The p-values for each strategy indicate that Determination ($p = 0.961$), Social ($p = 0.930$), Memory ($p = 0.666$), and Cognitive ($p = 0.615$) do not show statistically significant differences across study levels. However, Metacognitive strategies ($p = 0.099$) approach significance but remain above the 0.05 threshold. These results indicate that the level of study does not significantly affect vocabulary learning strategies. However, metacognitive strategies show a slightly stronger association with study level, suggesting a potential trend that may become more pronounced with a larger sample size.

The effect sizes (Eta squared) for each strategy further confirm the minimal influence of the study level. Specifically, Determination (0.002), Social (0.002), Memory (0.008), and Cognitive (0.009) all exhibit extremely small effects. In contrast, Metacognitive strategies show a small effect size of 0.032. Although the effect sizes are generally very small, the largest is observed for metacognitive strategies, reinforcing the idea that advanced students may develop better self-monitoring techniques over time.

5. Discussion

This quantitative study involved examining VLSs among 195 EFL Omani students studying the English Foundation Program at one of the public universities in the Sultanate of Oman. The results showed that all vocabulary learning strategies had medium-frequency use, whereby the metacog-

nitive strategies had the highest associated mean (3.26), whereas memory strategies had the lowest mean (3.12). Furthermore, 55 question items demonstrated medium-frequency use, while only four items exhibited high-frequency use (Q7_DET "I use a bilingual dictionary," Q46_COG "Verbal repetition," Q4_DET "analyse the meaning through the available pictures or gestures," Q5_DET "I guess the meaning from the textual context," with the following means: 3.55, 3.67, 3.76, and 3.95, respectively. Therefore, it is anticipated that the study's findings will have an impact on how to use the most appropriate VLSs to support students.

Regarding age, notably, a difference was found in terms of mean scores, whereby the age group 20–22 had a higher associated mean score (3.23) compared with the age group 17-19 which had (3.18). However, age does not significantly affect the use of VLSs among EFL Omani students. Concerning gender, notable differences existed between male and female Omani students; female students had a higher associated mean score compared with male students in all VLSs. As for female Omani students, the associated mean scores in Determination, Social, Memory, Cognitive, and Metacognitive were 3.36, 3.23, 3.21, 3.38, and 3.47, respectively. In contrast, the mean scores for male Omani students in Determination, Social, Memory, Cognitive, and Metacognitive were 3.13, 3.17, 3.05, 3.04, and 3.10, respectively. Studies on gender differences related to language learning and vocabulary learning strategies have shown contrasting findings. For instance, Montero-SaizAja's[39] study revealed higher means for female students compared with male ones. In other words, female students use language learning strategies slightly more than male ones. Further, based on the U Mann-Whitney test, there are statistically significant gender divergences in the use of language learning strategies. In addition, higher means and better maximum scores were found among female students in productive vocabulary. However, no statistically significant gender-based divergences were found in productive vocabulary. In the Malaysian context, no significant difference was found in the overall use of vocabulary learning strategies based on gender[40]. This was supported by another study in the Vietnamese context, whereby Yen et al.[41] indicated a broad consensus across genders on the importance of strategies that foster autonomous vocabulary learning.

Concerning the effect of level of study, among the 59 question items, only two question items (Q37_MEM "Use the new words in sentences," and Q59_MET "Continue to study the new words over time'') were found to have a significant difference that is below (0.05). In general, the study level did not significantly affect strategy selection, though metacognitive strategies showed a slight upward trend with advanced levels. In their study, Anuar and Aziz[42] reported that although no significant differences were revealed in the overall strategy use between high and low-proficiency learners, metacognitive strategies were found to be utilised significantly more by learners with high proficiency. Further, Jomaa, Attamimi, and Al Mahri[43] reported that age, gender, and levels of study do not affect using artificial intelligence to learn new vocabulary by EFL Omani students.

Compared with other studies, Teng[44] asserts that social strategy facilitates students' learning of new vocabulary through social interaction. Asking classmates what a word means is an example of a social strategy. With a mean score of 2.97, the usage of social strategies was determined to be "medium strategy use" in Kafipour et al.'s[27] study in the Iranian setting. However, with a mean score of 3.03, this strategy was the most popular among Jordanian university students while learning new terms according to Al-Khasawneh's[28] study. Nonetheless, social strategies were among the least utilised by EFL Chinese learners[32] and Moroccan ones[29]. The results of the current study are not consistent with the previous two studies and that of Komol and Sripetpun[30], who demonstrated that social strategies were the VLSs that Thai EFL learners used the least.

Schmitt[2] asserts that because vocabulary acquisition is becoming more complex and heavily relies on exposure to the language, vocabulary learning procedures are becoming increasingly crucial in the process of learning a second language. Aside from rote memorising and dictionary use, the majority of students are unaware of the many methods available for word learning[21]. In terms of gender differences, there was no statistically significant difference in the total usage of vocabulary acquisition strategies between male and female students. The memory methods category was the only one where there was a discernible difference between the genders. The mean for female students was the highest at 3.05 with a standard deviation of 1.04, while the mean for male students was 2.83 with the same standard deviation.

According to their study, female learners are more inclined than male learners to use memory strategies. Their findings partially agree with the findings of the current study, whereby female Omani students had a higher mean score in all VLSs, with the metacognitive strategy having the highest associated mean. Nevertheless, this finding does not allow for the drawing of any firm conclusions [45] since all mean scores of male and female Omani students belong to the medium frequency use.

The findings of the current study contradict Alqarni's [24] study on the use of VLSs by Saudi EFL learners, which found that students' overall usage of VLSs was low [1]. However, the finding is consistent with some earlier research on EFL university students [24] in that metacognitive strategies were found to be the most commonly employed of the five categories of VLSs. It is possible that students are not taught in the classroom how crucial it is to use these strategies to expand their vocabulary as stated by [1]. However, it should be highlighted that instruction in the use of such explicit VLSs is necessary for their proper implementation [1].

At the university level, students should be taught vocabulary learning strategies in addition to techniques like note-taking, flashcards, and repeating new words [45]. Lacking enough vocabulary can affect students even at the postgraduate level [46, 47]. While it is not a bad idea to ask peers for assistance, it should be remembered that peers could be a source of false information that could impede their advancement. Instead of requiring them to consult a dictionary, teaching students to infer meanings from word contexts could help them become more independent. Every learning technique often aims to overcome a certain shortcoming. Thus, a well-rounded vocabulary acquisition approach has been created after taking into account the particular conditions and factors of each learner. These recommendations and suggestions call for other studies to investigate VLSs among students from different contexts. This can be achieved through following multiple approaches [48] to present a comprehensive picture of the situation.

6. Conclusions

This study aimed to address two research questions regarding vocabulary learning strategies among English as a Foreign Language (EFL) Omani learners at a public university in the Sultanate of Oman. Specifically, it sought to identify the most and least frequently used vocabulary learning strategies among this group of students and determine whether significant differences exist in strategy selection based on demographic factors, such as age, gender, or level of study. For educators and researchers dedicated to enhancing vocabulary acquisition and retention in EFL classrooms, the study provides evidence that students are transitioning from basic strategies, such as rote memorization to more advanced metacognitive strategies. This finding may help teachers focus their efforts on refining the specific strategies indicated by these questions, ultimately improving the efficiency of vocabulary acquisition in EFL classrooms. The findings on age suggest that vocabulary learning and retention improve over time, implying that a longer period of study might be beneficial. Although the study found some differences in vocabulary learning strategies between male and female Omani students, namely in Determination, Cognitive, and Metacognitive strategies, these differences were not statistically significant in Social and Memory strategies. However, future research could explore whether gender-based learning competitions—conducted in class or online—might enhance vocabulary learning, particularly in specialized or professional contexts for advanced learners. To enhance vocabulary learning outcomes among EFL students, several practical measures can be implemented. First, educators should integrate a wider variety of vocabulary learning strategies into lesson plans, including explicit instruction on metacognitive techniques such as self-monitoring, goal setting, and evaluating learning progress. Second, teachers could incorporate gamified learning approaches, such as vocabulary competitions, word association games, and digital flashcard platforms, to encourage active engagement and improve retention. Third, online tools and applications, such as Quizlet, Memrise, and Anki, should be used to provide students with personalized vocabulary practice opportunities outside the classroom.

Despite its contributions, this study has several theoretical and practical limitations. First, many statistical mean scores related to vocabulary learning strategies fell within the medium-frequency range. This raises questions about the effectiveness of the survey questions in distinguishing between high-, medium-, and low-frequency strategy use.

Additionally, the study focused only on EFL students at the beginning of their academic journey, without comparing them to students nearing graduation. A broader comparison between new and advanced learners could provide a more comprehensive picture of vocabulary learning strategies over time. The study's methodological approach was also limited. It relied exclusively on a quantitative questionnaire-based survey, without qualitative insights that could provide deeper explanations for observed patterns. Moreover, the study was restricted to EFL Omani students enrolled in a Foundation Program at a single public university, which limits the generalizability of the findings. While the sample size of 195 students meets basic validity requirements, it may be insufficient for achieving a high level of reliability in broader applications. Future studies could expand on this research by investigating vocabulary learning strategies across different academic programs, educational institutions, and learning contexts. A qualitative approach could also offer richer insights into why students choose certain strategies and how gender differences in strategy use emerge. Additionally, given the apparent link between age and vocabulary retention, policymakers and educators might consider promoting English language learning at a later stage, allowing students to leverage their increased cognitive and sociolinguistic abilities.

Author Contributions

Conceptualization, N.J.; methodology, N.J., R.A.; software, N.J.; validation, N.J., R.A.; formal analysis, N.J.; investigation, N.J., R.A.; resources, K.A.; data curation, K.A.; writing—original draft preparation, N.J.; writing—review and editing, N.J., R.A.; visualization, K.A.; supervision, N.J.; project administration, N.J., R.A., K.A; funding acquisition, N.J., R.A., K.A. All authors have read and agreed to the published version of the manuscript.

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Informed Consent Statement

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Data Availability Statement

All data, results, and research instruments used in the study are available upon request.

Conflicts of Interest

The authors declare no conflict of interest.

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