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Strategies of Learning Medical Vocabulary (A Case Study of Sudanese EFL Students at Faculty of Medicine, Karari University, Sudan)

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Abstract: ***This study aims at investigating the Sudanese EFL students' learning strategies in learning medical vocabulary. The study adopts the descriptive and the analytical methods to analyze the collected data. A questionnaire is used to collect data for this study. The questionnaire is composed of 13 statements distributed to 87 respondents. The results were statistically computed in term of frequencies, and percentages.The study concludes with a number of findings: Most students of medicine rarely employ cognitive, memory and determination strategies.The study made a number of recommendations: Attention should be paid to the teaching of the productive medical vocabulary to students of medicine,students of medicine should be provided with both definitional and contextual information about medical words and vocabulary learning strategies should be reflected in the current emphasis on authentic communicative activities.***

1. Introduction

A student of medicine is encountered with a mass of new and complicated concepts symbolized in words whose structure is unfamiliar to most college graduates of today. Medical vocabulary presents a formidable task to the learner. It is noticed that most medical students are not fully aware of how to use vocabulary-learning strategies efficiently. Many studies have been conducted to investigate the problems of medical vocabulary learning strategies.Medani (1988) studied vocabulary learning strategies used by Sudanese learners of English investigating the relationship between strategy use and four learner factors. Also, Fatima, Mohamed, and Ashinida (2015) and Elbadri (2016) explored the types of vocabulary learning strategies used by learners of English as a foreign language in Sudanese universities. Although the existing studies have clearly investigated vocabulary-learning strategies, they have not addressed these strategies among medical students. Thus, this study empirically and objectively intends to answer the following questions:

1) How often do medical students employ cognitive strategies in learning medical vocabulary?
2) How frequently do medical students employ determination strategies in learning medical vocabulary?
3) How often do medical students employ memory strategies in learning medical vocabulary?

To answer these questions, the study makes the following hypotheses:

1) Medical students rarely employ cognitive strategies in learning medical vocabulary.
2) Medical students rarely employ determination strategies in learning medical vocabulary.
3) Medical students rarely employ memory strategies in learning medical vocabulary.

2. Conceptual Background

The conceptual background of this study covers the following items: the importance of vocabulary, definition of learning strategies and types of learning strategies, which include cognitive strategies, determination strategies, and memory strategies.

Carter, (1998) pointed out that, many of the difficulties that learners encounter, in both receptive and productive language use, result from the lack of vocabulary knowledge. Consequently, it is widely acknowledged that vocabulary is a very important part in English language learning, and no one can communicate in any meaningful way without vocabulary. He also, affirmed that learners see vocabulary as being a very, if not the most, important element in language learning. In the same line, Wilkins (1972) explains thatvocabulary is much more important and should receive more attention than grammar. In addition, Harmer (1991) asserts that choosing words carefully in certain situations is more important than choosing grammatical structures because language learners cannot use structures correctly if they do not have enough vocabulary knowledge. Rubin, (1975: 43) statesstrategies are “the techniques or devices which a learner may use to acquire knowledge.” According to Ellis,(1997learning strategies are considered problem-oriented.Having the knowledge of strategies could be important, as learning seems to be more effective when learners are aware of the process underlying the learning, they are involved in. Moreover,Gu and Johnson, (1996) state that successful language learners are characterized by knowing what their vocabulary goals are and by being able to choose what vocabulary to focus on.There are three main strategies used by many EFL learners to learn medical vocabulary: Cognitive strategy, determination strategy and memory strategy.

Cognitive strategies are similar to memory strategies in some cases, but are not focused so specifically on manipulative mental processing. According to Schmitt,

(1997) cognitive strategies primarily refer to written and verbal repetition; written repetition; word lists; put English labels on physical objects; keep a vocabulary notebook as well as some mechanical means involving vocabulary learning.

In determination strategies a learner may discover a new word's meaning through guess meaning from textual context, analyze any available pictures or gestures, analyze affixes, roots, check for L1 cognate; use a dictionary (bilingual or monolingual) guessing from an L1 cognate, using reference materials (mainly a dictionary), or asking someone else (e.g., their teacher or classmates).

According to Craik & Lockhart, (1972) memory strategies involve recalling meaning of a word based on its decoding and connection with formerly learned students' knowledge. Pressley *et al.* (1982) indicate that the Keyword method is an effective method of improving word retrieval.

3. Methodology

The population of the study consists of 100 medical students enrolled in the first year at the College of Medicine, Karary University. Out of the 100 students, 87students were randomly chosen. A questionnaire was used as tool for data collection. The questionnaire consists of 13 statements which are used to measure the three strategies used by medical students in learning medical vocabulary. Descriptive and the analytical methods were used to analyze the data of this study.

4. Results and Discussion

This part deals with data analysis and discussions of the results. The following fivetables ((4.1), (4.2), (4.3), (4.4), (4.5)) show the results,data analysis and discussion of the first hypothesis "**Students of medicine rarely employ cognitive strategies in learning medical vocabulary**" which is explained in term of the four questions.

Table 4.1: How often do you do oral repetition for Learning Medical words?

Answer	Frequency	Percentage
Never	37	42.5%
Rarely	30	34.5%
Sometimes	12	13.9%
Often	5	5.7%
Always	3	3.4%
Total	87	100.0%

As seen in table (4.1), the results show that 42.5% of the respondents never do oral repetition for learning medical words and 34.5% of the them rarely do oral repetition for learning medical words. The results also show that 13.9% of the respondents sometimes do oral repetition for learning medical words. 5.7% of them often do that while only 3.4% of the respondents always do the that. This is inconsistent with Nation, (1990) that learners can decrease the learning burden of pronunciation by selecting words with regular spelling wherever possible, by using patterns which will help them, and by practicing the spelling of new medical word that is similar to the spelling of known words. It is quite clear from table (4.1) that oral repetition seems to be the least actively cognitive strategy practiced by medical students. This may account for the fact students are not aware of the significant role of oral repetition in assimilating new medical words and its apparent role on repetition and recall of words beside its effective role in active use of language. These results might reflect that students rarely give a considerable attention to the nature of medical words, and so they seldom practice this technique to enlighten the burden of medical word structure.

Table 4.2: How often do you do written repetition for medical words?

Answer	Frequency	Percentage
Never	39	44.8%
Rarely	24	27.6%
Sometimes	11	12.7%
Often	9	10.3%
Always	4	4.6%
Total	**87**	**100.0%**

Table (4.2) indicates that 44.8% of the respondents never do written repetition for medical words, 27.6% of the respondents rarely do that, and 12.7% sometimes do written repetition. It is alsoseen that 10.3% of the respondents often do written repetition for medical words and 4.6% always do written repetition for medical words. This can really be considered as an indication that medical students are not aware of the importance of such a strategy. These results show that written repetition is among the least practiced cognitive strategies among medical students. This is incongruent with Carter, (1998) that, the more a word is analyzed or is enriched by repeated writing and other associations; the more likely that word will be retrieved and recalled.

Table 4.3: How often do you put medical words on objects?

Answer	Frequency	Percentage
Never	32	36.8%
Rarely	15	17.2%
Sometimes	21	24.2%
Often	9	10.3%
Always	10	11.5%
Total	87	100.0%

Table (4.3) shows that 36.8% of the respondents never put medical words on objects, 24.2% of the respondents sometimes put medical words on objects, 17.2% rarely do that, 11.5% always do that and 10.3% often do that. It is quite clear that the majority of students never use this strategy. This result is consistence with Fan (2003) that students did not choose imagery and grouping strategies in learning vocabulary.Furthermore, the majority of respondents' responses to this statement disagreed implicitly on the assumption that putting words on physical objects or labeling them can ease medical students' vocabulary learning when this strategy is employed.

Table 4.4: How often do you take note in class on medical word?

Answer	Frequency	Percentage
Never	20	23.0%
Rarely	33	37.9%
Sometimes	21	24.1%
Often	8	9.2%
Always	5	5.7%
Total	87	100.0%

The results reported in the table (4.4) illustrate that the respondents' views of the statement (take-note in class on medical words). 37.9% of the respondents rarely take note in class on medical word, 24.1% sometimes take note in class on medical word, and 23% never take such note. It also noticed that 9.2% often take note in class on medical word and only 5.7% of the respondents always take note.This indicates that the majority of students rarely employed this strategy. This result is inconsistent with (O'Malley et al., 1990: Oxford, 1989&1990) that note taking is one of the cognitive strategies often practiced by language learners adequately.This result shows that the majority of the respondents have not used this strategy positively on the assumption that medical students are aware of the effective role of note-taking in facilitating their learning of medical words.

Table 4.5: Illustration and Verification of the First Hypothesis

Questions	Means	Interpretation	Stander Deviation	Test value	P-value (Sig)
How often do you do oral repetition for Learning Medical words	1.93	Rarely	1.05	53.63	0.000
How often do you do written repetition for medical words?	2.02	Rarely	1.19	46.05	0.000
How often do put medical words on objects	2.42	Rarely	1.38	20.53	0.000
How often do you take note in class on medical word?	2.37	Rarely	1.11	29.03	0.000

Table (4.5) illustrates the results of chi-square test of goodness of fitness for each item in Axis 1. All chi-square tests are statistically significant (p-values < 0.05), namely, there is statistically significant difference between the expected and observed frequencies. There is significant difference between the respondents in their opinion toward each item of Axis1. The mean shows significant differences for favor of (rarely). This supports the first hypothesis: "Students of medicine rarely employ cognitive strategies in learning medical vocabulary".

The following five tables ((4.6), (4.7), (4.8), (4.9), (4.10), (4.11) show the results, data analysis and discussion of the second hypothesis. "**Medical students rarely employ determination strategies in learning medical vocabulary"**

Table 4.6: How often do you analyze affixes of medical words?

Answer	Frequency	Percentage
Never	21	24.1%
Rarely	39	44.8%
Sometimes	12	13.9%
Often	6	6.9%
Always	9	10.3%
Total	87	100.0%

Table (4.6) shows that, 44.8% of the respondents rarely analyze affixes of medical words, 24.1% never analyze affixes of medical words, while 13.9% sometimes analyze affixes of medical words. On the other hand, 10.3% of the respondents always analyze affixes of medical words and 6.9% of them often do that.

It is clear that the majority of students rarely use this strategy in their learning of medical word. The strategy of analyzing affixes and roots was among determination strategies that were the least practiced. This strategy received a percentage of 44.8% which means that, it is rarely used by most of the students. Such results seem to be in disagreement with Nation, (1990) findings.

Table 4.7: How often do you analyze Parts of Speech?

Answer	Frequency	Percentage
Never	24	27.6%
Rarely	30	34.5%
Sometimes	15	17.3%
Often	9	10.3%
Always	9	10.3%
Total	87	100.0%

As seen in table (4.7) 34.5% of the respondents rarely analyze parts of speech, 27.6% never analyze parts of speech, while 17.3% sometimes do that. It also shows that 10.3% of the respondents often analyze parts of speech and 10.3% of the respondents always do that.This is inconsistent with Rubin (1975) that students focused on form by looking at patterns and using analysis, took advantage of all practice opportunities, monitored his or her own speech and that of others, and paid attention to meaning.This shows that, the strategy of analyzing parts of speech is rarely employed by students (34.5%). This is incongruent with Miller and Fellbaum, (1991) that, the organizational structure of the word meaning can be identified by distinguishing between parts of speech.

Table 4.8: How often do you use bilingual dictionary?

Answer	Frequency	Percentage
Never	2	2.3%
Rarely	8	9.2%
Sometimes	25	28.8%
Often	19	21.8%
Always	33	37.9%
Total	87	100.0%

Table (4.8) reports that 37.9% of the respondents always use bilingual dictionary, 28.8% of the respondents sometimes use it, and 21.8% oftherespondentsoften use it. However, 9.2% of the respondents rarely use bilingual dictionary and only 2.3% of them never use a dictionary.This indicates that the majority of students of medicine have claimed that they always practice looking up words in bilingual dictionary (37.9%). However, this result was rather expected since the use of bilingual dictionary is a common practice due to

widespread of grammar-translation method especially in the Sudan.

Table 4.9: How frequently do you use medical dictionary?

Answer	Frequency	Percentage
Never	25	28.7%
Rarely	27	31.0%
Sometimes	13	14.9%
Often	16	18.4%
Always	6	6.9%
Total	87	100.0%

The results in table (4.9) shows that 31.0% of the respondents rarely use medical dictionary and 28.7% never use medical dictionary. The results also show that 18.4% of the respondents often use medical dictionary, 14.9% of the respondents sometimes use it, and 6.9% of them always use it.It is quite clear that the majority of the respondents have claimed that they rarely (31.0%) use medical dictionary.

Table 4.10: How often do you guessing meaning from textual context?

Answer	Frequency	Percentage
Never	35	40.2%
Rarely	24	27.6%
Sometimes	14	16.1%
Often	10	11.5%
Always	4	4.6%
Total	87	100.0%

The results in table (4.10) show that 40.2% of the respondents never figure out the meaning from textual context, 27.6% rarely do as that, and 16.1% sometimes do that. Also, 11.5% of the respondents often figure out the meaning from textual context and 4.6% of the them always figure out the meaning from textual context. It is clear that(40.2%) of the respondents never use guessing of the new medical words.This result was rather expected since students depend heavily on dictionaries in discovering the meaning of the new words as shown in the above tables., This result supports the hypothesis that determination strategy is rarely employed by students of medicine.

Table 4.11: Illustration and Verification of the Second Hypothesis.

Questions	Mean	Interpretation	Stander Deviation	Test value	P- value (Sig)
How often do you analyze affixes of medical words?	2.34	Rarely	1.22	40.76	0.000
How often do you analyze Parts of Speech?	2.41	Rarely	1.28	20.07	0.000
How often do you use bilingual dictionary?	3.83	Often	1.11	36.16	0.000
How frequently do you use medical dictionary?	2.44	Rarely	1.27	17.31	0.000
How often do you figure out the meaning from textual context?	2.13	Rarely	1.99	34.44	0.000

Table (4.11) shows the results of chi-square test of goodness of fitness for each item in Axis2. All chi-square tests are statistically significant (p-values < 0.05). There is significant difference between the respondents in their opinion toward each item of Axis2. The mean interpretation shows significant differences for favor of (rarely) except the third item “How often do you use bilingual dictionary?” which tends to be (often). Thus, these results support the second hypothesis: “**Students of medicine rarely employ determination strategies in learning medical vocabulary”.**

The following five tables ((4.12), (4.13), (4.14), (4.15), (4.16) show the results, data analysis and discussion of the third hypothesis "**Students of medicine rarely employ memory strategies in learning medical vocabulary**"

Table 4.12: How often do you learn the spelling of medical words?

Answer	Frequency	Percentage
never	38	43.7%
Rarely	19	21.8%
Sometimes	10	11.5%
Often	12	13.8%
Always	8	9.2%
Total	87	100.0%

As seen in table (4.12) 43.7% of the respondents never learn the spelling of medical words, 21.8% rarely do that, and 11.5% sometimes do that. On the other hand, 13.8% of the respondents often learn the spelling of medical words and 9.2% always learn the spelling of medical words. This result indicates that students are not aware of the relative usefulness of spelling in pronunciation of medical words in isolation as well as in communicative contexts. This is in disagreement with Nation, (2001) that pronounceability is an important factor affecting word learning.

Table 4.13: How often do you connect the medical word to its similar and opposite meaning?

Answer	Frequency	Percentage
never	18	20.7%
Rarely	34	39.1%
Sometimes	17	19.6%
Often	11	12.6%
Always	7	8.0%
Total	87	100.0%

Table (4.13) shows 39.1% of the respondents rarely connect the medical word to its similar and opposite meaning, 20.7% never do that, but 19.6% sometimes do that. Also 12.6% of the respondents often connect the medical word to its similar and opposite meaning and 8% always do that. The presented results in table (4.13) show that the strategy of connecting a word with its synonyms and antonyms is rarely used in medical word learning. This strategy received comparatively the highest percentage of 39.1%. Such a result significantly indicates that the majority of students rarelyused this strategy when learning new medical words. This result is not correlated with Nation,(1990) that showing similarities between words can make learning easier.

Table 4.14: How often do you deliberately learn collocates of medical words?

Answer	Frequency	Percentage
Never	23	26.4%
Rarely	34	39.1%
Sometimes	12	13.8%
Often	10	11.5%
Always	8	9.2%
Total	87	100.0%

The data presented in table (4.14), shows 39.1% of the respondents rarely deliberately learn collocates of medical words, 26.4% never deliberately learn collocates of medical words, and 13.8% sometimes do that. It also shows that 11.5% of the respondents often deliberately learn collocates of medical words and 9.2% of the respondents always do that. It is noticed that the minority of the respondents have claimed they always (9.2%) use this strategy whereas the majority of them have claimed they rarely (39.1%) use it.

This result is inconsistence with Gu and, Jonson (1996) who state that memorization is only useful if it is one of a wide range of actively used strategies.

Table 4.15: How often do you memorize Unanalyzed Chunks?

Answer	Frequency	Percentage
Never	34	39.1%
Rarely	15	17.2%
Sometimes	18	20.7%
Often	12	13.8%
Always	8	9.2%
Total	87	100.0%

As seen intable (4.15) 39.1% of the respondents never memorize unanalyzed medical chunks, 20.7% sometimes do that, and 17.2% rarely do that. Whereas 13.8% of the respondents often memorize unanalyzed medical chunks, and 9.2% of the respondents always do that. The results presented in table (4.15) indicate most of the students never use memorize unanalyzed chunks when learning medical vocabulary (39.1%.) This result is inconsistent with Nation, (2001) that memorizing unanalyzed chunks is particularly useful in language learning and could contribute effectively in producing language.

Table 4.16: Illustration and Verification the Third Hypothesis.

Questions	Means	Interpretation	Stander Deviation	Test value	P- value (Sig)
How often do you learn the spelling of medical words?	2.23	Rarely	1.37	34.44	0.000
How often do you connect the medical word to its similar and opposite meaning?	2.48	Rarely	1.19	24.44	0.000
How often do you deliberately learn collocates of medical words?	2.38	Rarely	1.25	27.54	0.000
How often do you memorize Unanalyzed medical Chunks?	2.37	Rarely	1.36	22.94	0.000

Table (4.16) shows the results of chi-square test of goodness of fitness for each item in Axis 3. All chi-square tests are statistically significant (p-values < 0.05). There is statistically significant difference between the expected and observed frequencies. That is to say, there is significant difference between the respondents in their opinion toward each item of Axis3. According to the mean and its interpretation, all the items show significant differences for favor of (rarely).

This supports the third hypothesis: "**Students of medicine rarely employ memory strategies in learning medical vocabulary**".

5. Conclusion

Based on the findings, the studyconcluded that, the majority of medical students at KararyUniversity are not aware of the importance of the cognitive strategies, determination strategies, and memory strategies in facilitating and consolidating medical words learning. Therefore, students do not appreciate vocabulary learning strategies and their effectiveness on learning medical words.Lack of using these proper strategies in learning medical words is obviously reflected in their limited vocabulary. Most of the neglected strategies were really effective in enriching the students' medical vocabulary which is the base of success in their field of study.

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