RESEARCH ARTICLE

INVESTIGATING THE OPTIMAL TEACHING & LEARNING STRATEGIES FOR MEDICAL TERMINOLOGIES IN THE FACULTIES OF MEDICINE IN SUDAN

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ABSTRACT

This study aims to cast light on some of the innovative teaching strategies received by medical students to help them to promote better medical English vocabulary. This area has been chosen by the researcher because by nature medical English vocabulary is difficult and complexity to understand because it's based on Greek and Latin roots in addition to the similarities between suffixes and prefixes of medical terms. The study is conducted in 2016 in medical colleges in Sudan. It carried out on 100 of participants to enhance the acquisition of medical vocabulary in the respective colleges. Sixteen models of strategies were adopted to investigate the most effective learning strategies for teaching medical English vocabulary, that medical students will choose one appropriate option from the five options: (very effective, effective, to some effective, not effective, and not at all effective). The main results of the study showed that Medical students need to use multi strategies for learning medical English vocabulary, that mean they are face difficulties in understanding medical English words or medical English syllabus doesn't cope with their English language needs. Moreover, subject teachers may explain some of difficult medical words or list the key vocabulary, therefore for the most of them used different kinds of learning strategies. Visual and auditory activities, in class group discussion, people lecture note, dictionaries, team project, and research and renew my information and simple dialogue werethe most the effective ones. The study recommended that variation of strategies for learning medical English vocabulary is enhancing understand medical English words. Teaching strategies of medical English vocabulary must taking into consideration a wide scope knowledge of medical vocabulary uses. Medical students have to apply good time management to help them to use a lot of different kinds of learning medical vocabulary strategies. Medical English Syllabus designers should increase and focus on terms of Medical vocabulary in English courses and use audiovisual aids for teaching it.

Key words: medical vocabulary, teaching strategies , terminology, Latinate

INTRODUCTION

Knowing medical terminology is the foundation for studying any health-related field. Medicine has its own language. In the course of studying terminology, learning medical terms related to anatomy, physiology, diagnoses, conditions and treatments. In order to understand the meaning of common conditions, medical students have to study Latin root words, prefixes and suffixes. Mastering medical terminology is a complex task, but when medical students have appropriate learning resources. Local and online courses are available, but if they are motivated and self-directed, they can teach good medical English vocabulary (Denise, N. 2001).

Definition of the strategy

A strategy uses always to require sort of planning such as when someone faced with a new situation, a plan of action designed to achieve an overall aim. A strategy aims to steer the direction of the overall organization. It affects the long-term well-being of the organization and it has a long time horizon, usually measured in years rather than months or weeks. A typical strategic plan may set goals to be achieved five or more years in the future. A strategy builds on and exploits to the fullest extents the organization's resources and abilities. A successful strategy is the result of integrated /collaborative efforts by man parts of the organization (Johnson, G. Scholes, K. and Whittington, R. 2005).

Materials and Methods

Participants in the current study were 100 of medical students, third level at Faculty of Medicine, University of Khartoum. It consisted of sixteen questions – the data were drawn from questionnaire direct with medical students during the lecture at the end of final semester six of the 2016. The questionnaire was designed to explain the study purposes that to measured out the most effective learning strategies that used by medical students for understanding medical English vocabulary. The questionnaire included major types of learning strategies were used by medical students, such as following: Visual and auditory activities. In class group discussion. Prepare lecture note. Online dictionaries or printed dictionaries. Team project, Research and renew my information, Simple dialogue, Stimulations, Memory, Context lesson, Humour in class, Course book, Critical thinking, and Self-study, Cognitive and Online course. The part of investigating some effective learning strategies in medical English vocabulary, the medical students will choose one appropriate option from the five options: (very effective, effective, to some effective, not effective, and not at all effective).

Analysis

The data were collected at the end of final semester at third level during the year 2016. The questionnaire was designed to explain the study purposes that to investigate the most effective learning strategies that medical students used for understanding medical English vocabulary. According to what has been described in the literature framework and after enter the data for the purpose of statistical analysis, using the questionnaire tool to collection data, and to investigation the study led the requested purpose by checking the hypotheses of the study, some statistical methods are used which are as follows:

- Frequency distribution –Graphs and charts – Percentage – Chi- square test to obtain the results are characterized by a high accuracy as much as possible, it was use the SPSS (Statistical Package for Social Sciences) techniques.

On your opinion what are the effective strategies of teaching methods of the medical vocabulary

Type of strategy	Very effective	Effective	To some extent	Not effective	Not effective at all
1-Self-study	19	**35**	33	10	3
2-In-class group discussion	**48**	40	6	4	2
3-Prepare lecture notes	28	**48**	19	3	2
4-Team project	31	**41**	19	8	1
5-Memory	28	**39**	25	6	2
6-Cgnitive	16	33	**38**	13	0
7-Critical thinking	21	**37**	22	19	1
8-Visual and auditory activities	**57**	34	8	1	0
9-Humor in the class	30	**35**	25	8	2

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10-Stimulations	30	**39**	29	2	0
11-Online courses	15	27	**40**	13	5
12-Online dictionary or printed dictionary	**34**	29	25	11	1
13-Coures book	20	**40**	29	9	2
14-Research and renew my information	28	**43**	24	4	1
15-Context lesson	13	**53**	30	4	0
16-Simple dialogue	32	**38**	24	6	0

Results

On your opinion what the effective of teaching methods of the medical vocabulary: Self-study 35% effective. In-class group discussion 48% very effective. Prepare lecture notes 48% effective. Team project 41% effective. Memory 39% effective. Cognitive 38% to some extent. Critical thinking 37% effective. Visual and auditory activities 57% very effective. Humor in the class 35% effective. Stimulations 39% effective. Online course 40% to some effective. Online dictionary or printed dictionary 34% very effective. Courses book 40% effective. Research and renew my information 43% effective. Context lesson 53% effective. Simple dialogue 38% effective.

Discussion

Medical students use a lot of vocabulary learning strategies that target specific content of medical vocabulary to acquire a deeper meaning of medical English vocabulary words. Teachers may be explain some difficulty words or list the key vocabulary for the topic or unit, but the most of medical terminology need to work through using some effective strategies to identify and understanding unknown or unclear medical words. Needless vocabulary is central to medical English language teaching because without sufficient vocabulary medical students cannot understand others or express their own ideas. As (Lewis, 1993. P:89). States that '' *Lexis is the core or heart of language*''.

Particularly as students develop greater fluency and expression in English; it is significant for them to acquire more productive vocabulary knowledge to develop their own personal vocabulary learning strategies. Also learning vocabulary help medial student's master medical terminology for their purposes.So the results of medical students' opinions about both very effective and effective strategies for understanding medical English vocabulary in order as following:

1.   Visual and auditory activities (91%)

Medical students really need to be professional absolutely have to learn the language of medicine, by honing the most effective memorization techniques and using proven resources, they can easily beers and turn learning into an effortless, even pleasant, task.(Medical institution of medical sciences and education, 2015) wrote that

1.   Using visual cues to remember complex terms.
2.   Practicing terms using apps for iOS and Android.
3.   Deciphering terms by learning basic Latin components (roots, suffix, prefix).
4.   Bulk learning using self-made acronyms.
5.   Using engaging guides and work books
6.   **Taking free online classes.**

2.   In class group discussion (88%)

Research has shown that the interaction with others regarding word learning will offer them the support they need (Ruddell, and Shearer, 2002). Therefore, teachers should carefully select students to work to gather using a mixed – grouping format and emphasize that it is important to discuss how and why words are selected. This will benefit students who do not know how to identify words for learning. Offer time and guidance to students with special needs by providing mini-lessons on word identification skill, how to use context to guess at the meaning for word, and how to use other resources within the text such as pictures, graphics, glossaries, and diagrams.

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3.   Prepare lecture note (76%)

Do prepare lecture notes give medical students a large range of experiment as Brown, S. And Race, P. (2002). Showed that '' *to find out what kind of notes work best for you, e.g., a detailed outline, a list of major points, a tree diagram. The notes should include key definitions, proofs, solved problems, examples and analogies.''*

4.   Online dictionaries or printed dictionaries (73%)

Using the medical dictionary will enrich your vocabulary and deepen your understanding of the meanings and use of medical terms. Look up each new word and see what language it comes from and how it is pronounced. Do some further research and see how else this particular word is used other than the examples given in the context of medicine.

5.   Team project (72%)

Team project is an organization of medical students who encourage and support the use of team-based learning in all level of medical English learning. They are continuing professional development among medical students to improve their proficiency in use appropriate medical English words and write medical assignments.

6.   Research and renew my information (71%)

This part is very important to medical students to enhancing medical vocabulary. .(Atlanta conference on Sciences, Technology and Improving Policy.(2009). concerned and point out some recommendations to encourage medical students to build strong foundation to be many parts of the medical researchers.

   I.   Research and renew information bringing together large data sets of medical data and tools to analyze this data offers the potential to expand the research capabilities of doctors. Medical researcher can use this vast source of biological and clinical data to discover new treatments and better understand illness and diagnosed.

   II.   Applying informatics to health care creates the possibility of enabling ''rapid learning'' health applications to aid in biomedical research, effectiveness research.

   III. Using rapid learning techniques cannot only improve patient safety, it can also lead to substantial improvements in the quality and cost of care.

7.   Simple dialogue (70%)

English dialogues can be used in a wide variety of situations for learners. Dialogues are useful in a number of ways. Kenneth, B. (2016). Stated that:

- Dialogues provide models on which students can base their own conversations.
- Dialogues can focus in on language production in a way that allows students to practice correct usage.
- Student created dialogues can be used to encourage students' creative nature.
- Dialogues can be used as a basis for listening comprehension exercises.

Dialogues can be used in many ways in a classroom. Using dialogues in the classroom introducing new vocabulary and can help medical students become familiar with standard formulas used when discussing various medical topics.

8.   Stimulations (69%)

Simulations enable students to solve real medical word problems in a safe environment and enjoy themselves while doing so. It can also be any specific event that causes someone to do something, (vocabulary.com).

Stimulation is a language-learning model, which allows medical students to express themselves to their   peers   in   a   group   setting,   groups   comprising   usually   three   or   four. (See   www. Languages.dk/methods/methods, html).

9.   Memory (67%)

Memory technique is common use in medical terms knowledge, needless dictionaries or medical text to refer to only depend on previous medical words. As showed (g-w.com). The memory techniques for learning medical terms people use a variety of methods to help them study and remember new terms. On common technique is to make and use flash cards. Some people work with the way a word looks to help

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remember its meaning. Another technique is to look for familiar words share the same word part. Some of medical students like to investigate the origins of a new word; this strategy may be used with every day English words.

10.   Context lesson (66%)

Learning medical vocabulary by using context is great and effective to develop and increase the funnels of medical vocabulary knowledge in addition to improve the foundation of English language skills also can facilitate the medical syllabus for both teachers and medical students to understand better medical English vocabulary, As Harris and Marks(1992. P:94)mention that   *''Using context clues to infer the meanings of unknown words is the first word-learning strategy because it is the most important one. Most words are learned from context, and if we can increase students' proficiency in learning from context even a small amount, we will greatly increase the number of words students learn. It has a vital role to improve students with rich, sustained, and powerful instruction on using context clues. Providing such instruction takes a good deal of time and effort on the part of both teachers and students''.*

11.   Humor in class (65%)

Humor is different learning strategy , teachers use laughter during the lecture to change the atmosphere of class and medical students' mood, therefore humor strategy can refresh students' mind to understand more possible medical vocabulary.(Robinson, V. 1991) showed that humor and laughter have been a focus of attention in the popular media and in the media literature. The role of humor including patient-physician communication, psychological aspects o patients care, medical education, and as a mean of reducing stress in medical professionals

12.   Course book (60%)

Good course book always develops English language skills as well as increases vocabulary contents of especially medical students that face difficulties in understanding medical English vocabulary example words roots, suffixes, prefixes so that course book can improve their abilities to understand, read, write and communication in medical field with good medical vocabulary fluency.

There has been a research interest in defining the vocabulary size required for second language reading. A study by Hwang, K. and Nation (1995) showed that knowledge of the 2,000 most frequent word families enables L2 readers to recognize 84% of the words in various types of authentic texts. This falls well short of the 95% of words which (Laufer, B. 1992) indicated that: The needs to be recognized for unassisted reading, and which would require a minimum vocabulary size of 3,000 word families. More recently, (Laufer, B.1997. P: 20-34) suggest that the 95% lexical threshold in L2 reading would be required to enable L2 readers to apply their L1 reading strategies.

13.   Critical thinking (58%)

Critical Thinking provides you with the skills to analyze and evaluate information. With these skills medical students able to obtain the greatest amount of knowledge from a piece of data. It provides the best chance of making the correct decision, and minimizes damages if a mistake does occur. (See corporate Training materials.com)

14.   Self-study (54%)

When medical students depend on their own efforts to understand better medical English vocabulary, this strategy will support and improve others different learning medical terminology strategies e.g. cognitive and memory strategies. As Haggard, M. (1986. P: 634-642) emphasizes that '' *The vocabulary self-collection strategy(vss) is an interactive –learning instructional strategy that promotes word consciousness, as students are actively engaged in identifying important words from their reading to share with member of their class. Students select words from their reading that are new and interesting, use the context and other resources to determine the meaning of the words, and nominate the words to be learned by others in the group or glass.''*

15.   Cognitive (49%)

Cognitive strategies are one type of learning strategy that learners use in order to learn more successfully. These include repetition, organizing new language, summarizing meaning, guessing meaning from context, using imagery for memorization. All of these strategies involve deliberate manipulation of language to

improve learning. Classifications of learning strategies distinguish between cognitive strategies and two other types, met cognitive strategies (organizing learning), and social/ affective strategies (which enable interaction), e.g. a learner remembers new words by visualizing them represented in a memorable or ridiculous situation. This makes it easier and faster to recall these words. In the classroom Activities that can be described as cognitive strategies, include making mind maps, visualization, association, mnemonics, using clues in reading comprehension, underlining key words, scanning and self-testing and monitoring. (www.oxforddictionaries.com. Retrieved 2016-02-04.)

16.   Online course (42%) .

Online courses are important and modern technology learning strategy for understanding medical words. Some of these courses are free and give medical students certificate to verify your completion of the course. This course is designed for educational and / or informational purposes only. Online medical courses are now on iTunesU. It is easy to download courses to your iOS device or learn at your desk. Rapid learning health networks can enable doctors to better practice evidence- based medicine.(Rachel, D. 2016), online medical terminology course, DESMOINES University.)

Conclusion

Medical English vocabulary is considering now one of the most difficulties that face medical students at the faculties of medicine, therefore Faculty of Medicine, University of Khartoum, should develop wide knowledge of medical vocabulary to be fulfilled and facilitate these strategies and encouragement medical students to adapt multi learning strategies of medical vocabulary, hence medical students' view regarding theirs needs for medical English vocabulary, there are a lot of effective strategies could help them to understand medical vocabulary i.e. Firstly visual and auditory activities creating an audio narrative of the information followed by a video presentation that emphasizes similar key points will appeal to auditory learners as well as visual learners. Secondly in class group discussion, the interaction with others regarding word learning will offer them the support their needs. Prepare lecture notes is regard as well as is experiment to find out what kind of notes work best for you e.g. detailed out line, a list of major points. And online or printed dictionaries and using medical dictionaries will help to understand the meanings of using medical English vocabulary. There are an others effective strategies yield fruitful results for understanding medical vocabulary for example team project, research and renew my information, simple dialogue, stimulations, memory, context lesson, humor in class, course book, critical thinking, self-study, cognitive, and online courses.

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