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THE ROLE OF GAME TECHNOLOGY IN ADVANCING OF FUTURE DENTISTS’ PROFESSIONAL VOCABULARY COMPETENCE FORMATION PROCESS

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РОЛЬ ІГРОВОЇ ТЕХНОЛОГІЇ В УДОСКОНАЛЕННІ ПРОЦЕСУ ФОРМУВАННЯ ПРОФЕСІЙНОЇ ЛЕКСИЧНОЇ КОМПЕТЕНТНОСТІ МАЙБУТНІХ СТОМАТОЛОГІВ

The aim of the work – to elaborate and substantiate the game technology for improving future dentists’ professional vocabulary competence formation based on Cambridge methods of English language teaching.

The main body. The students of O. Bohomolets National Medical University are taught professional English in the way they could use it in real life situations. Thus, this requires thorough preparation which demands using different kinds of tasks. One of them, which is considered in the article, is applied to train accuracy of using professional vocabulary. It is described as words remembering. Different kinds of memory and the principles are involved in this process. Basing these principles, special exercises and activities were described. They are divided into traditional and innovative ones.

Conclusions. Innovative activities are beneficial for students as they involve different kinds of learners’ memory. Besides, they contain an aspect of a game in order to motivate students to facilitate the process of words remembering. The benefit of these tasks was proved by surveying students and English teachers of O. Bohomolets National Medical University. Notwithstanding the popularity of innovative tasks among the students, the value of traditional exercises was explained. Some recommendations on how to make the routine tasks more creative were given in the article.

Key words: vocabulary competence; short-term memory; working memory; long-term memory; mnemonics.

Мета роботи – розробка та обґрунтування технологій гри для вдосконалення формування компетентності професійних навиків у майбутніх стоматологів на основі методів вивчення англійської мови в Кембриджі.

Основна частина. Студенти Національного медичного університету імені О. О. Богомольця вивчають англійську мову з метою можливості її використання в реальних життєвих умовах. Досягнення цієї мети вимагає з боку викладача ретельної підготовки різних видів завдань для студентів. Одним із них є вправи, що використовуються для навчання правильності використання іншомовної лексики, тобто сприяння процесу її запам’ятовування. У цей процес залучаються різні види пам’яті та принципи. На їх основі були розроблені різноманітні вправи та завдання, які класифікуються на традиційні та інноваційні.

Висновки. Інноваційні завдання є корисними для студентів, зважаючи на той факт, що вони сприяють залученню різних видів пам’яті студентів. Крім того, мотивуючий аспект гри значно оптимізує процес запам’ятовування нових слів. Ефективність запропонованих завдань підтверджена шляхом опитування, проведеного серед викладачів та студентів Національного медичного університету імені О. О. Богомольця. Незважаючи на популярність інноваційних завдань серед студентів, користь традиційних вправ також була обґрунтована. Викладачам надані рекомендації щодо того, як перетворити виконання рутинних завдань на креативний процес формування професійної лексичної компетентності майбутніх стоматологів.

Ключові слова: лексична компетентність; короткочасна пам’ять; оперативна пам’ять; довготривала пам’ять; мнемоніка.

Introduction. In the history of foreign language competence formation, there have been a wide range of methods and techniques developed to guide teachers to find the ideal way to help their students to develop linguistic competence. Nowadays, language teachers and applied linguists generally recognize the importance of vocabulary learning and explore ways of promoting it more effectively [1]. A major interest in this issue is to create methods of future dentists’ foreign language competence formation in order to make this kind of language teaching as efficient as possible. Whereas English had previously decided its own destiny, it now became subject to the wishes, needs and demands of people other than language teachers [5].

The study of languages for specific purposes (LSP) represents a synthesis of linguistics and methodology

of foreign language competence formation. It is highly student–centered, focused on learners' professional and linguistic needs [13].

Research into how students learn has shown that people learn in different ways and thus various methods and types of activities are required to facilitate an immersive learning environment that allows each student to learn effectively [11] taking into account that huge amount of professional information must be taught in a very limited time. Also, it is necessary to make an emphasis, that the level of English is quite variable among students, even in the same group. It could be explained, from one point of view, with ultimate goals, the future doctors want to reach in professional activity, looking forwards integration with international society or another one – they had grown up and are taught in provincial area without modern possibilities for learning and travelling abroad.

The analysis of different researches by J. Harmer [3, 4], J. Scrivener [9], S. Thornburry [10], P. Ur [12] on methods of general vocabulary competence formation revealed that the methods of future dentists' vocabulary competence formation was not studied in a full extent. Since professional foreign language competence contains its own peculiarities that are not typical for other professions. Thus, there is a strong need to deliberate on this matter, and adapt the methods of general vocabulary competence formation for future dentists.

The aim of the work – to elaborate and substantiate the game technology for improving future dentists' professional vocabulary competence formation based on Cambridge methods of English language teaching.

The main body. Vocabulary knowledge is often viewed as a critical tool for second language learners because a limited vocabulary in a second language impedes successful communication [1]. In this way, vocabulary competence plays a key role in a foreign language competence formation. According to the definition that is given by Oxford dictionary [8], the word "competence" means the ability to do something successfully or efficiently; the term "linguistic competence" is defined as a person's subconscious knowledge of the rules governing the formation of speech [8]. So, vocabulary competence can be defined as the ability to use words appropriately to the context in the speech. To perform this task successfully, the learners need not only to learn a lot of words, but to remember them. In fact, S. Thornburry [10] considers the process of vocabulary learning as remembering. It is largely a matter of accumulating individual items.

S. Thornburry [10] believes that in the process of words memorizing three kinds of memory are involved: the short-term memory, working memory, and long-term memory.

The short-term memory (STM) is the brain's capacity to hold a limited number of items of information for periods of time up to a few seconds. It is the kind of memory that is involved in holding in one's head a telephone number for as long as it takes to be able to dial it or to repeat a word that has just been heard from the teacher. But successful vocabulary learning definitely involves more than simply holding words in mind for a few seconds. For words to be integrated into long-term memory they need to be subjected to different kinds of operations.

Working memory focuses on operations, which are performed, on the words. Many cognitive tasks such as reasoning, learning and understanding depend on working memory. It can be thought of as a kind of work bench, where information is first placed, studied and moved before being filed away for later retrieval. The information that is being manipulated can come from external sources via the senses, or it can be downloaded from the long-term memory or both. For example, a learner can hear a word (like "paradontitis"), download a similar word from long-term memory (like "periodontitis"), and compare the two in working memory, before deciding if they are the same or different. Material remains in working memory for about twenty seconds. This capacity is made possible by the existence of the articulatory loop, a process of subvocal repetition. It enables the short-term memory to be kept refreshed. To put it another way, the ability to hold a phonological representation of a word in working memory is a good predictor of language learning aptitude.

Long-term memory can be thought of as a kind of filing system. Unlike working memory, which has a limited capacity and no permanent content, long-term memory has an enormous capacity, and its contents are durable over time. However, the fact that learners can retain new vocabulary items the length of a lesson (i.e. beyond the few seconds duration of the short-term memory) but have forgotten them by the next lesson suggests that long-term memory is not always as long-term as could be. Rather, it occupies a continuum from the quickly forgotten to the never forgotten. The great challenge for language learners is to transform material from the quickly forgotten to the never forgotten [10].

Research [10] into memory suggests that, in order to ensure that material moves into permanent long-term memory, a number of principles need to be observed.

Repetition: the time-honoured way of memorizing new material is through repeated rehearsal of the material while it is still in working memory i.e. letting the articulatory loop just run and run. However, simply repeating an item (the basis of rote learning) seems to have little long-term effect. But one kind of important method is repetition of encounters with a word. It has been estimated that, when reading, words stand a good chance of being remembered if they have been met at least seven times over spaced intervals.

Retrieval: Another kind of repetition that is crucial what is called the retrieval practice effect. This means, simply, that the act of retrieving a word from memory makes it more likely that the learner will be able to recall it again later. Activities which require retrieval, such as using the new word in written sentences, oil the path for future recall.

Spacing: This is known as the principle of distributed practice. This applies in both the short term and the long term memory. When teaching students a new set of words, for example, it is best to present the first two or three items, then go back and test these, then present some more, then backtrack again, and so on. As each word becomes better learned, the testing interval can gradually be extended. The aim is to test each item at the longest interval at which it can reliably be recalled. Similarly, over a sequence of lessons, newly presented vocabulary should be reviewed in the next lesson, but the interval between successive tests should gradually be increased.

Pacing: Learners have different learning styles and process data at different rates, so ideally they should be given the opportunity to pace their own rehearsal activities. This may mean the teacher allowing time during vocabulary learning for learners to do memory work such as organizing or reviewing their vocabulary silently and individually.

Use: Putting words to use, preferably in some interesting way, is the best way of ensuring they are added to long-term memory. It is the principle popularly known as "use it or lose it". Meanwhile, the following points all relate to ways of manipulating words in working memory.

Cognitive depth: The more decisions the learner makes about a word, and the more cognitively demanding these decisions, the better the word is remembered. For example, a relatively superficial judgement might be simply to match it with a word that rhymes with it: e.g. rash/rush. A deeper level decision might be to decide on its part of speech (noun, adjective, verb, etc). Deeper still might be to use it to complete a sentence.

Personal organizing: The judgements that learners make about a word are most effective if they are personalized. In one study, subjects who had read a sentence aloud containing new words showed better recall than subjects who had simply silently rehearsed the words. But subjects who had made up their own sentences containing the words and read them aloud did better still.

Imaging: Best of all were subjects where the task was given of silently visualizing a mental picture to go with a new word. Other tests have shown that easily visualized words are more memorable than words that don't immediately evoke a picture. This suggests that even for abstract words. It might help if learners associate them with some mental image. Interestingly, it doesn't seem to matter if the image is highly imaginative or even very vivid, so long as it is self-generated, rather than acquired second-hand.

Mnemonics: These are tricks to help retrieve items or rules that are stored in memory and that are not yet automatically retrievable. The best kinds of mnemonics are often visual. The most well-attested memory technique is the keyword technique, which is described. For example, first aid for acute myocardial infarction can be summarized in the acronym "MONA" which stands for M – morphine, O – oxygen, N – nitroglycerin, A – aspirin. Another acronym "OBAMA SING" can be used for remembering pharmaceutical treatment for myocardial infarction, where O – Oxygen, B – Beta blockers, A – Aspirin, M – Morphine, A – ACE inhibitors, S – Statins, I – IV (intravenously) heparin, N – NitroGlycerin.

Motivation: Simply wanting to learn new words is no guarantee that words will be remembered. The only difference a strong motivation makes is that the learner is likely to spend more time on rehearsal and practice, which in the end will pay off in terms of memory. But even unmotivated learners remember words if they have been set tasks that require them to make decisions about them.

Attention/arousal: Contrary to popular belief, vocabulary cannot be improved during sleep, simply by listening to a tape. Some degree of conscious attention is required. A very high degree of attention (called arousal) seems to correlate with improved recall. Words that trigger a strong emotional response, for example, are more easily recalled than ones that don't. This may account for the fact that many learners seem to have a knack of remembering swear words, even if they have heard them only a couple of times.

Affective depth: Related to the preceding point, affective (i.e. emotional) information is stored along

with cognitive (i.e. intellectual) data, and may play an equally important role on how words are stored and recalled. Just as it is important for learners to make cognitive judgements about words, it may also be important to make affective judgements, such as pleasant or unpleasant associations with particular words [10].

Taking into consideration the principles of vocabulary remembering and peculiarities of different memory kinds, the following exercises and activities are beneficial for dental students to perform in order to memorize professional vocabulary better.

The exercises and activities, which are offered below, can be divided into traditional and innovative ones. Traditional tasks include drilling the sentences or dialogues by repeating after the teacher or the tape, in chorus and individually, until they can say them correctly [7]. It is very necessary since learners need to say the word to themselves as they learn it to recall the words from memory [1]. Other practice exercises are matching words with correct pictures or definitions, completing sentences or dialogues, asking or answering questions, filling the gaps in the sentences, crossing out an odd word, categorizing words, finding synonyms or antonyms to a given word, constructing new words by adding prefixes or suffixes (example: conscious – unconscious, treat – treatment), doing crosswords, composing sentences with a given word and other vocabulary games using the target language. Some scientists mention that these methods are not effective on account of their fail to form critical thinking and creative skills of the students [2]. Though, these exercises are perfect for training students' ability to memorize new vocabulary which is not considered as an easy task. In order to facilitate this routine process, game aspect may be added. It is also worth using different kinds of tasks in order to turn the process of learning vocabulary into diverse one.

Game technology, that includes different vocabulary games, is quite effective in teaching new words in the context which is an obligatory requirement for vocabulary competence formation. The methods, involved in this technology, are "snowball", "crocodile game", "tic tac toe game", "concentration game", "half a crossword", "ball game", "things in a sack" and others.

"Snow ball" activity. A student says one sentence, another student repeats the first sentence and adds his own one; the next student says two previous sentences and adds his own sentence. This task is useful in practising vocabulary on such topics as "first aid for medical emergencies" or "treatment for different dental diseases".

Half a crossword. This activity is better to use as a pair work. Pairs of students are divided into students A and students B. Students A and B get a crossword. Student A gets a crossword with a half of words filled in, student B gets another half of words. Students cannot look at each other papers. The aim of the game is to guess all words in a crossword. In pairs, students give each other clues to help their partners guess the missing words.

"Guess the word". A student describes the meaning of the word (disease, symptom, instrument or any other medical term) to the group without naming it. Group mates should guess what this word is.

"Ball game". One student names the word, throws the ball to another student asking to give the definition of this word or to compose a sentence with it.

"Two columns". This is a pair work or it can be used in small groups of students. For each group teacher prepares cards with the terms and cards with their explanations. The instructor should be sure that cards with terms and cards with definitions are of different colours. Then all the cards are put face down in rows and columns. Students should turn over the cards randomly. If cards match (the definition with the appropriate word), they remove the pair. If cards do not match, they turn them back over and try again. The aim of the game is to open all the cards. This activity is very useful for students to train vocabulary, especially medical terms: diagnosis, symptoms, instruments etc. But it is worth mentioning that this task is time consuming. Though, according to own teaching experience, students are totally engaged in this activity. They consider it as an interesting one, so they are more motivated to learn new words. Moreover, the value of this task is that students not only memorize the word and its spelling, but they understand the meaning of this word.

All matching activities will work better if students move cards with words or definitions, etc. Under this condition students use not only their visual memory but kinesthetic one as well, so in this way vocabulary is memorized much better.

"Tic tac toe game". A teacher draws 9 squares with the words in them. A group of students is divided into 2 teams. In turns, they should choose a square with the word and compose a sentence with this word or a student explains the meaning of the medical term. If the sentence is correct, the teacher marks the square with a cross or zero. The goal of the game is to get all marks (crosses or zeros) in a line.

It is worth emphasizing that all these tasks for practice stage were designed as learning tasks. As the practice stage is not a test, so students can get help from other students or a teacher.

"Things in a sack". Different things (for example dental instruments) are put into a sack or a packet. Students need to choose one thing, not looking at it, and describe this thing, explain the use of it.

"Jeopardy game". This activity can be used during review lessons where students can refresh vocabulary on medical emergencies. The students are divided into several groups. These groups are provided with several categories of questions. For example, the first category have the questions about caries, the other category – questions about pulpitis, the next category is devoted to questions about periodontitis, and the last category – questions about periostitis. Each question has a different score. In turns, each group chooses the certain category and certain question. That group wins which has the highest score. This game can be successfully used to check students' knowledge in vocabulary of different diseases.

When students perform mentioned above activities, the teacher should pay attention to the students' mistakes. Once they occur, the instructor should correct them immediately or ask other students to correct the mistakes. According to own experience of observing teaching, most of teachers have tendency of correcting students themselves instead of encouraging students' self-correction or appealing to peer-correction. All that is written above evidences that instructors should use first self-correction, peer-correction, book-correction strategies, and after all others teacher-correction strategy. Students learn much better if they acquire knowledge on their own [6].

The analysis of these activities' effectiveness was conducted at the Foreign Languages Department of O. Bohomolets National Medical University (BNMU) by surveying 32 students. They were asked to rank the most important activities for vocabulary competence formation to the least important ones.

We also invited 10 English experts, who are English teachers at BNMU, to assess the value of offered methods for foreign language competence formation according to their point of view. Like students, they were also asked to rank activities from the most important to the least important ones taking into account their own pedagogical experience. The results of the survey are presented in the Table 1 "Top list of activities that train vocabulary".

Table 1.

Top list of activities that train vocabulary				
A kind of activity	The place in a top list		Amount in %	
	Students	Experts	Students	Experts
Ball game	1	6	50. 2	25
Things in a sack	2	5	50.1	34
Jeopardy game	3	6	25	50
Guess the word	4	2	24.2	50
Tic Tac Toe	5	4	16.7	50
Two columns	6	6	20.1	33
Snow ball	7	3	33.4	34
Half a Crossword	8	4	33.3	25

During the conversation, the students were asked to compare traditional methods and innovative methods for vocabulary competence formation. Mostly students (95 %) prefer innovative methods rather than traditional ones.

Having analyzed the results that are presented in the Table 1, it is obvious that students prefer activities which require not only knowledge but creative skills as well. Thus, the top priority is a "ball game" and "things in a sack" activity. These activities facilitate the process of words remembering by involving work of visual, auditory and kinesthetic memory as a result students remember new words faster and better. On account of a conquering aspect, students become more motivated in successful performing the set tasks.

But experts express another point of view by preferring methods that require academic skills only. This attitude can be justified by a number of reasons: the methods that are chosen by students are time-consuming and require thorough preparation. Though, they are more beneficial for students: offered methods facilitate the process of vocabulary memorizing and promote more qualitative vocabulary competence formation.

Conclusions. The game technology for vocabulary competence formation was elaborated and substantiated in order to facilitate the process of professional

vocabulary competence formation in future dentists. The offered technology is based on Cambridge methods of English language teaching. Besides, new methods were developed taking into consideration the peculiarities of professional vocabulary, process of new words remembering. Their effectiveness was proved by conducting the experiment.

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