Voronina H. R., Meleshko I. V., Kriukova Ye. S., Yamshynska N. V.

EFFECTIVE STRATEGIES OF LEARNING ESP VOCABULARY
FOR TECHNICAL STUDENTS

In the process of rapid development of information technology, traditional education system needs significant renewal in accordance with the current 21st century standards. Higher education institutions are at the stage of reorganization of the learning process, focusing on the student's personality, abilities, and needs. That is why in recent decades the new methods and forms of learning have become widely used. A specialist in any industry, who is easily oriented in professional terminology, is in great demand being ready for productive communication and confident in professional activities. Learning professional terminology helps to improve the quality of educational process in teaching English for Specific Purposes and, accordingly, the development of language skills in technical specialties. Being a footstone of any professional language, term is a core of ESP vocabulary. The article analyses the major characteristics of terms, their peculiarities, international vocabulary and major difficulties that students face in terms translation practice. Learning ESP vocabulary is a complex and challenging experience. The recent research on the problems of organization the relevant process is introduced. The article identifies the effective strategies and interactive tools for ESP vocabulary learning. The study considers positive aspects of distance support in particular educational circumstances. It outlines the most common challenges arising in the process of learning ESP. Special attention is drawn to monitoring the most effective methods of teaching ESP for the students of technical specialties. The article focuses on the studying of students' vocabulary learning strategies to make less of a struggle which have been shown to play an important role in future students' professional life.

Key words: *technical students, foreign language, professional terminology, ESP vocabulary learning strategy, interactive tools, distance learning.*

(статтю подано мовою оригіналу)

The 21st century students need advanced knowledge-based skills to succeed in the today's competitive globalised world. Transforming learning process with a focus on building students' competences is one of key teachers' tasks in order to give learners more opportunities to be involved in creating new educational methods according to current requirements as well as redesigning traditional lessons and learning activities. Foreign language knowledge has become an integral part of professional competence and successful career of a modern specialist. Professional competencies of graduates are a complex system of specialized knowledge and skills. There is a growing need for specialists who are practically fluent in foreign languages that allows them to establish professional contacts. A special place in the system that promotes the formation of students' professional competencies is occupied by the discipline "English for Specific Purposes" which provides the opportunity for successful professional communication.

For recent years ESP has emerged as one of the priority areas for technical universities. ESP vocabulary learning should be developed through research methodology to enhance students' language skills enriching learning process with a collaborative, practice-based approach that helps educators provide activities for their students to be actively engaged with tutorials, IT-technologies, discussions and self-assessment in classrooms.

The aim of the article is to identify the effective strategies and interactive tools for ESP vocabulary learning. Since foreign language knowledge is an integral part of a successful career in any field, special attention is paid to the process of ESP learning for technical students.

The scholars and educators discuss the theoretical and practical approaches to teaching and learning ESP globally. For the last decades, numerous studies have been focused on the different aspects of effective ESP learning and teaching: motivation to learn English (S. Caciora, A. Stuza) and teach ESP (W. Bekai, S. Harkouss), language learning strategies in ESP (D. Pirsl, S. Popovska, N. Stojkovic), enhancing employability skills in ESP context (E. Tevdovska), computer technologies for ESP (Z. Knezevic, G. Chmelikova, L. Hurajova, T. Erben, R. Ban, M. Castaneda), designing ESP course (L. Kardaleska, G. Nedelkoska, I. S. P. Nation).

Methodological bases of mastering professional terminology have been studied by a number of language researchers: vocabulary-learning strategies (S. Hunston, I. S. P. Nation, R. Oxford, & D. Crookall, N. Schmitt), the impact of using explicit/implicit vocabulary teaching strategies (A. Al-Darayseh), terminology integration in English language teaching and learning (S. Gunuc, N. Babacan), practical strategies for ESL students (Y-K. Min), vocabulary learning and teaching in a second language (B. Harley), second language vocabulary acquisition (J. Coady, T. Huckin), making and using word lists for language learning (I. S. P. Nation), interdisciplinary approach to translation (D. Milosevic).

Learning ESP vocabulary starts with an acquaintance of the main characteristics and features of terms. The next step is to study the peculiarities of the translation of terms, the number of which is not a constant unit due to nonstop progress in various fields of science and technology. Detailed study of dictionaries and reference books allow not only to summarize the most common ways of translating terms but also to get acquainted with descriptive tools that solve the problem of reflection in the language of the newly formed concept.

Each stage of human development is characterized by the emergence of new concepts that instantly find their terminological reflection in a language. The process of terms appearing is rapid and lasting, explaining why the study of a foreign language for specific purposes is largely concentrated on mastering the basics of professional translation. Since ESP vocabulary is the bulk of the modern linguistic fund, particular importance is attached to the study of structural and semantic features of the term and the peculiarities of its translation.

At the initial stage, students get acquainted with the concept of "term", its main features and characteristics that distinguish it from general words. The process of new terms formation is associated with the emergence of new scientific ideas and areas of research, development of new technologies, the creation of new technological processes.

New terms that are not in dictionaries are usually the carriers of the most important information for the recipient of the message. Terminological vocabulary occupies a prominent place in the vocabulary of any literary language. The study of the peculiarities of the term translation is important not only because of the significant prevalence of this phenomenon, but also because of reflection importance of the surrounding reality in translation.

The international vocabulary takes a relevant place in the professional language having certain features of its translation. According to the analysis of recent research, it is known that international words get into one or another language either due to borrowing from another language, or due to the fact that two languages borrowed the corresponding word from the third language (for example, from Latin or Greek). They are enriched by new links, new combinations and often require the ways of new translation equivalents not registered in dictionaries. The largest number of errors in translations occur precisely because of the above lexical phenomenon, which creates difficulties for translation.

An equally common problem that students face in the process of mastering ESP is the translation of pseudo-international terms which are more often associated and identified in two languages in content or usage however do not fully correspond to each other. In ESP learning the term remains in the centre of attention, starting with the gradual mastery of general lexical units, which step by step turns into mastering professional terminology. In English classes in order to improve the skills of terms translation, the teacher offers students tasks to translate sentences or texts on professional topics from English into Ukrainian and vice versa. However, performing such tasks as translation of scientific and technical texts students have a number of difficulties.

Taking into account the complexity and versatility of both the concept of term and the problems of its translation, a language teacher faces the need to design a relevant ESP course organizing a learning process that would create the most effective conditions for the study of professional terminology [7]. In most cases the acquisition of ESP vocabulary goes in parallel with the study of professional disciplines, which to some extent facilitates not only understanding, but also memorizing a large number of terms. Consultations of teachers of professional disciplines certainly contribute to the acquisition of ESP vocabulary.

The study of professional terminology by students of technical specialties should be consistent and systematic. As a rule, the ESP course is organized in such a way that the assimilation of terms occurs in the process of working on scientific and technical texts. The regularity of this type of work provides a gradual mastery of a certain professional terminology. When working on a professionally-oriented text, it becomes appropriate to keep dictionaries that contain terms of a particular specialty with the provided translation. This gives an opportunity not only to systematize knowledge, but also facilitates its acquisition [9]. However, the modern student often perceives the learning process through a close connection with the latest technologies.

The learning of professional terminology is of particular difficulty for students, since the terms are limited in lexical compatibility and different semantic relationships. There are various ways of teaching English professional terminology. The basic unit of information in English for specific purposes is the authentic text. Authentic professionally oriented texts help students to accumulate and systematize the lexical minimum, sufficient for the ability to work with professionally significant information. The acquired terminological minimum of texts allows students to read and extract information from special texts, thus widening their professional horizons [14]. Students begin to understand that the language practice is an effective way to learn ESP vocabulary: they find it easier to memorize a new word using it. New words are better learned both in speaking and writing.

The experts believe that the process of learning ESP vocabulary includes two systems: motivation and methods [11]. Students motivation is an important factor that determines their need to learn vocabulary. This has a great influence on learning strategies and helps to control the educational process and evaluate students' learning outcomes. ESP teacher makes better use of strategies by exploring students' motivation in learning vocabulary. It is believed that ESP vocabulary should be carefully studied focusing on functions and used in context [14]. Studied through reading vocabulary is easier to be learnt in texts rather than in the lists of words, as the meaningful context allows for more complex and deep processing.

Effective learning of ESP vocabulary includes three key stages: introduction, training and control. It is important to provide students with the opportunity to observe and use origin speech patterns in the English language. For this purpose, it is proposed to use problem-based approaches. Learning new ESP vocabulary, the introduction stage covers drawing attention to new terminology in the context, revealing the meanings of new lexical units with the help of a linguistic guess, relying on previous language experience and theoretical information received by students in native language. At this stage, the students are involved in the following cognitive processes: mental needs of remembering; finding common features in the lexical material; correlation of unknown features with known ones,

memorizing of lexical units at the level of phrases, as well as at the level of sentences; grouping for compatibility; compilation of thematic series of words.

The next stage of training students in the use of ESP vocabulary is the supporting and encouraging them in speech communicative activities. This stage is characterized by the use of personal-oriented methods and technologies as problem-based tasks, games, projects, etc. The choice depends on the material being studied, the teacher's methodological preferences, and cognitive characteristics of students. This stage is characterized by authenticity of texts, intercultural orientation, use of complex communicative tasks, combining several types of speech activity, solving the problem of new lexical units' usage.

At this stage, the development and improvement of lexical competence in the application of new lexical units takes place, where the speech actions of students with lexical material are organized from reproduction within clearly defined limits to creative products. Exercises at the training stage are aimed at solving communicative problems based on active ESP vocabulary usage, quick solution of communicative tasks in different types of speech activity. The stage of training productive skills in the types of speech activity coincides with the improvement of lexical competence.

Learning strategies and activities are the tasks and exercises that students do as part of their university-related work both in and out of lessons. They can be exercises, that students complete in one class period or extended tasks or projects. Learning strategies and activities incorporate a research-based methodology and practice-based studying for learning activities to ensure teachers are embedding the 21st century foreign language skills in ESP teaching practices.

Vocabulary learning strategies are introduced in a number of research studies. In a well-known Schmitt's Taxonomy, vocabulary learning strategies are classified into five categories of acquiring new vocabulary: determination, social, memory, cognitive, and metacognitive [13]. The researcher developed two groups of the vocabulary learning strategies: discovery strategies (determination and social) and consolidation strategies (memory, cognitive, and metacognitive).

American scholars identify two types of vocabulary learning strategies (direct and indirect). They define the direct vocabulary learning strategy as a "mental" one that includes cognition, memorization and compensation sub-strategies through which students learn vocabulary intentionally, whereas the indirect vocabulary learning strategy involves the use of metacognition, affective and social strategies [12].

According to Nation's Taxonomy vocabulary learning strategy are grouped into: planning, sources, and processes [10]. During the first stage students plan their learning, then they explore relevant sources and use processes to learn vocabulary. The recent studies have proven the enhancement of vocabulary learning through gamification strategy [6].

A teacher provides all of the resources and materials to accompany their ESP learning process analysing the impact of learning strategies on student learning and deepen understanding of their future goals, facilitating students to use new activities within their own learning to create a lasting effect of change in the long run, sharing new learning activities with other educators, giving an opportunity for students to discuss, support and use knowledge mastering the English language skills.

ESP teachers constantly research educational technologies to identify the most effective ones. The communicative approach plays a valuable role for theories and practices in ESP vocabulary learning strategies. Researchers emphasize on the crucial role of vocabulary knowledge in the development of student's communicative competence [1; 2; 4].

A number of effective ESP vocabulary teaching tools such as context drills, word-on-board games, flash-card games, presentations, dictionary use, blended learning and role-play-based learning. These valuable tools are increasingly being used as more motivating and immersive ways to engage technical students in ESP vocabulary learning process. Use of a role play and presentation in learning process will help to build useful acquisition of professional terminology that has been problematic and in need of improvement [15]. Researchers believe that students should be introduced with such tools that allow them to develop communication skills for professional life as well as cognitive activity [5; 8].

The students themselves become interested in learning, using and understanding ESP vocabulary while being involved in learning process. Researchers believe that students should be introduced with such tools that allow them to develop communication skills for professional life as well as cognitive activity.

According to scientists, the use of computers is an integral part of the process of ESP mastering as it makes it easier to work with huge amounts of professional information and speeds up efficiency of learning. Learning professional terminology with the help of computers is becoming more diverse and interesting. Interactive computer technology makes learning ESP easier, as they activate students' critical thinking and increase motivation to study [3]. Since technical university students learn both specialized vocabulary and general technical terminology these practical tasks improve the skills of terms translation, help not only to understand but also to memorize a large number of terms.

Using IT-technologies, the teacher combines a variety of active elements that help diversify tasks aimed at mastering ESP vocabulary. Students, in turn, not only perform training exercises but also control the correctness of their performance. As a result, modern computer technology is becoming more reliable support of the teacher in the process of teaching a foreign language for professional purposes.

The distance learning tools help ESP teachers to organise vocabulary practice. Due to the limited number of practical English classes at technical faculties, the learning process often shifts to independent work. The peculiarity of distance education is that students are actively involved in the learning process. This leads to a focus on the quality of the course, taking into account the needs and individual development of each student. Special attention should be given to specialized platforms for distance education support. The main potential of such platforms is that the courses contain interactive elements like forums, glossaries, tasks, quizzes, surveys, databases and others. Different online platforms, such as Kahoot, LearningApps, Moodle, Padlet, Quizlet, Quizizz, Wordwall enable ESP teachers to motivate technical student to memorize professional terminology in easy, interesting and creative way. The ESP vocabulary training and testing process based on the use of innovative online tools encourages collaboration and communication in the language classes. In the conditions of constant quarantine restrictions, online platforms are the best options for ESP in the context of blending learning.

However, modern technologies do not always become a reliable assistant in the process of mastering professional terminology. Almost every student uses computer translators when preparing for an English class and completing professional translation assignments. The analysis of such works illustrates all the shortcomings of AI translation. However, working with e-dictionaries not only provides effective mastery of terminology, but also increases the motivation.

To sum up, the main task of a language teacher is to consider all the above discussed vocabulary learning strategies and interactive tools to help guide and optimize ESP learning of technical students. It is also important to take into account that each interactive tool allows creating new scenarios, combining different capabilities of online platforms. In turn, students are given more flexibility in performing tasks that significantly increases the motivation of students to learn ESP contributing to the active development of future professionals.

Bibliography:
1. Al-Darayseh A. The impact of using explicit/implicit vocabulary teaching strategies on improving students' vocabulary and reading comprehension. *Theory and Practice in Language Studies,* 2014. No. 4(6), p.1109–1118.
2. Coady J., & Huckin T. Second language vocabulary acquisition: A rationale for pedagogy. Cambridge : Cambridge University Press. 1997.
3. Erben T., Ban R., & Castaneda M. Teaching English Language Learners through Technology. London : Routledge. 2008.
4. Harley B. Vocabulary learning and teaching in a second language. *Canadian Modern Language Review*, 1996. No. 53(1), p. 3–12.
5. Hummel H., Nadolski R., Brinke D., & Baartman L. Content validity of game-based assessment: Case study of a serious game for ICT-managers in training. *Technology, Pedagogy and Education,* 2017. No. 26(2), p. 225–240.
6. Kriz W. C. The shift from teaching to learning: Individual, collective and organizational learning through gaming simulation. Bielefeld, Germany : W. Bertelsmann Verlag. 2014.
7. Macalister J., & Nation I. S. P. Language Curriculum Design. New York : Routledge. 2020.
8. Min Y-K. Vocabulary acquisition: Practical strategies for ESL Students. *Journal of International Students,* 2013. No. 3(1), p. 64–69.
9. Nation I. S. P. Making and Using Word Lists for Language Learning and Testing. Amsterdam : John Benjamin Publishing Company. 2016.
10. Nation I. S. P. Teaching vocabulary: Strategies and techniques. Boston, MA : Heinle Cengage Learning. 2008.
11. Nation I. S. P, & Hunston S. Learning Vocabulary in Another Language. Cambridge: Cambridge University Press. 2013.
12. Oxford R., & Crookall D. Vocabulary learning: A critical analysis of techniques. *TESL Canada Journal*, 1990. No. 7(2), p. 9–30.
13. Schmitt N., & McCarthy M. Vocabulary: Description, acquisition and pedagogy. Cambridge, UK : Cambridge University Press. 1997.
14. Stojkovic N. Positioning English for Specific Purposes in an English Language Teaching Context. Malaga : Vernon Press. 2019.
15. Sugito S., Susilowati S., Hartono H., & Supartono S. Enhancing Students' Communication Skills through Problem Posing and Presentation. *International Journal of Evaluation and Research in Education,* 2017. No. 6(1), p. 17–21.

References:
1. Al-Darayseh A. (2014) The impact of using explicit/implicit vocabulary teaching strategies on improving students' vocabulary and reading comprehension. *Theory and Practice in Language Studies,* 4(6), 1109–1118.
2. Coady J., & Huckin T. (1997). *Second language vocabulary acquisition: A rationale for pedagogy*. Cambridge: Cambridge University Press.
3. Erben T, Ban R., & Castaneda M. (2008) *Teaching English Language Learners through Technology*. London: Routledge.
4. Harley B. (1996) Vocabulary learning and teaching in a second language. *Canadian Modern Language Review*, 53(1), 3–12.
5. Hummel H., Nadolski R., Brinke D., & Baartman L. (2017) Content validity of game-based assessment: Case study of a serious game for ICT-managers in training. *Technology, Pedagogy and Education,* 26(2), 225–240.
6. Kriz W. C. (2014) *The shift from teaching to learning: Individual, collective and organizational learning through gaming simulation.* Bielefeld, Germany: W. Bertelsmann Verlag.
7. Macalister J., & Nation I. S. P. (2020) *Language Curriculum Design.* New York: Routledge.
8. Min Y-K. (2013) Vocabulary acquisition: Practical strategies for ESL Students. *Journal of International Students,* 3(1), 64–69.
9. Nation I. S. P. (2016) *Making and Using Word Lists for Language Learning and Testing.* Amsterdam: John Benjamin Publishing Company.
10. Nation I. S. P. (2008) *Teaching vocabulary: Strategies and techniques.* Boston, MA: Heinle Cengage Learning.
11. Nation I. S. P, & Hunston S. (2013) *Learning Vocabulary in Another Language.* Cambridge: Cambridge University Press.
12. Oxford R., & Crookall D. (1990) Vocabulary learning: A critical analysis of techniques. *TESL Canada Journal,* 7(2), 9–30.
13. Schmitt N., & McCarthy M. (1997) *Vocabulary: Description, acquisition and pedagogy.* Cambridge, UK: Cambridge University Press.

14. Stojkovic N. (2019). *Positioning English for Specific Purposes in an English Language Teaching Context.* Malaga: Vernon Press.
15. Sugito S., Susilowati S., Hartono H., & Supartono S. (2017) Enhancing Students' Communication Skills through Problem Posing and Presentation. *International Journal of Evaluation and Research in Education,* 6(1), 17–21.

Вороніна Г. Р., Мелешко І. В., Крюкова Є. С., Ямшинська Н. В. Ефективні стратегії вивчення професійно орієнтованої лексики студентами технічних спеціальностей

У процесі бурхливого розвитку інформаційних технологій традиційна система освіти потребує значного оновлення відповідно до сучасних стандартів XXI століття. Заклади вищої освіти перебувають на етапі реорганізації процесу навчання, орієнтованого на особистість студента, його здібності та потреби. Фахівець будь-якої галузі, який легко орієнтується у професійній термінології, дуже затребуваний через готовність до продуктивного спілкування та впевненість у професійній діяльності. Вивчення фахової термінології сприяє підвищенню якості навчального процесу викладання англійської мови професійного спрямування та відповідно розвитку мовних навичок студентів технічних спеціальностей. Будучи основою будь-якої професійної мови, термін є ядром професійно орієнтованого вокабуляру. У статті аналізуються основні характеристики термінів, їх особливості, інтернаціональна лексика та основні труднощі, з якими стикаються студенти у практиці перекладу термінології. Вивчення професійно орієнтованої лексики є складним і непростим досвідом. У статті представлено останні дослідження проблем організації відповідного процесу, визначено ефективні стратегії та інтерактивні інструменти для вивчення професійно орієнтованої лексики. В останні десятиліття набули широкого застосування нові методи і форми навчання. У дослідженні розглядаються позитивні аспекти дистанційного навчання в особливих освітніх умовах, висвітлюються найбільш поширені проблеми, що виникають у процесі вивчення професійної термінології. Особливу увагу приділено моніторингу найефективніших методів вивчення професійно орієнтованої лексики студентами технічних спеціальностей.

Ключові слова: студенти технічних спеціальностей, іноземна мова, професійна термінологія, стратегія вивчення професійно орієнтованої лексики, інтерактивні засоби, дистанційне навчання.

Гарєєва Ф. М., Чурсанова М. В., Савченко Д. В., Матвєєва Т. В.

ПІДВИЩЕННЯ ЕФЕКТИВНОСТІ ВИВЧЕННЯ ФІЗИКИ ІНОЗЕМНИМИ СТУДЕНТАМИ ЗАСОБАМИ ЦИФРОВИХ ТЕХНОЛОГІЙ

У роботі розглянуто питання організації вивчення фізики іноземними студентами у закладах вищої освіти України на технічних спеціальностях у разі проведення навчання англійською мовою.

З метою подолання основних складнощів у навчанні студентів-іноземців (комунікаційно-лінгвістичних, психологічних, розбіжностей рівня базової підготовки іноземців з пререквізитними вимогами дисципліни тощо) розроблено підхід до модернізації методики проведення практичних занять з фізики, який поєднує у собі використання активного методу навчання із залученням цифрових інструментів. Задіяно такі прийоми активного методу навчання, як взаємний обмін питаннями та відповідями між викладачем та студентами, обговорення, дискусія тощо. Проведене дослідження показало, що понад 60% іноземних студентів мають труднощі з вербальним (усним) спілкуванням на іноземній (англійській) мові, проте добре сприймають матеріал у письмовій формі. З огляду на цей фактор ми збільшили обсяг візуальної форми подачі навчальної інформації, яку вдалось реалізувати завдяки використанню цифрових інструментів під час дистанційного навчання, пов'язаного з карантинними обмеженнями. Здійснено комплексний підхід до відбору цифрових інструментів різного призначення: віртуальні середовища для організації навчального процесу, сервіси відеоконференцій з функціями демонстрації екрана, чату та коментування, а також віртуальні інтерактивні дошки для проведення занять, інструменти для перевірки знань тощо. Нами запропоновано використання блочної структури практичного заняття з фізики з чітким структуруванням етапів розв'язування задач.

Про ефективність розробленого підходу до модернізації методики проведення практичних занять з фізики свідчить позитивна динаміка активізації участі студентів на практичних заняттях через передачу вербальної інформації у текстовому та візуальному форматі, а також підвищення рівня успішності.

Ключові слова: іноземні студенти, англомовне навчання, цифрові інструменти, активні методи навчання, фізика, практичні заняття, методика розв'язання задач.

У контексті стратегії розвитку освіти та науки України надзвичайно важливим є зміцнення міжнародних позицій українських закладів вищої освіти (ЗВО), зокрема завдяки залученню до навчання студентів іноземного громадянства. Аналіз літературних джерел показав, що останніми роками спостерігається тенденція зростання попиту молоді з інших країн на технічні спеціальності, а отже, актуальними стають дослідження щодо викладання іноземним здобувачам природничих та технічних дисциплін [3; 5; 6; 8; 11].

Різноманітні аспекти навчання іноземних студентів в Україні стали предметом досліджень багатьох науковців, але лише невелика частина з них розглядали особливості викладання для іноземців курсу фізики