

Improving the quality of medical education through the introduction of moodle system for the formation of terminological competence of medical students

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ABSTRACT

Aim is to analyze the possibilities of using the electronic system Moodle for the formation of professional and terminological competence of medical students during the study of terminological competence for improving the quality of medical education.

Materials and Methods: The research used a number of scientific methods: general scientific (analysis, synthesis, generalization), specific research and others which ensured the selection and analysis of the source base, made it possible to determine the general trends in the study of the problem of using the electronic system Moodle for the formation of professional and terminological competence of medical students during the study of terminological competence for improving the quality of medical education.

Conclusions: At I. Horbachevsky Ternopil National Medical University we actively use the e-learning system Moodle (Modular Object Oriented Distance Learning Environment), to which there is free and unrestricted access. Using this program, the student takes on the role of an active subject who independently acquires knowledge, forms his/her own system of skills, of course with the help of certain sources, and the role of the teacher in this scheme is to motivate and support learners, prepare information sources used in self-study, etc. This is due to a significant increase in the requirements for quality training of future specialists in the medical field and market conditions in Ukraine, which set before the higher school the task of training specialists of the new generation who would be highly qualified, competitive, literate, and have perfect command of their professional terminology.

The Moodle system is able to optimize the learning process, promote the formation of terminological competence and master professional vocabulary. When creating educational and methodological complexes for the formation of terminological competence, the means of teaching, as well as the ways of presenting educational material and the principles of organizing the educational activities of students become important. The electronic platform Moodle, which has a wide range of resources for teaching and testing, is able to expand the communicative competencies and skills of students needed to effectively master professional Latin terminology. The Moodle system has the optimal set of resource opportunities for the implementation of blended learning – classroom and extracurricular, which is its main advantage.

KEY WORDS: quality of medical education, health care, medical students, professional competence. distance learning, e-learning platform, Moodle

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INTRODUCTION

Ensuring the competitiveness of graduates of higher medical institutions in the Ukrainian and international labor markets is possible only due to the increase in quality of training of medical and pharmaceutical personnel. Today, a competent approach is relevant in the field of medical education, which is aimed at the transition from theoretical knowledge to professional competence [1]. The formation of professional competence of medical students is carried out by the staff of all disciplines of the curriculum, divided into different cycles. In particular, the system of training specialists in the field of medicine provides for the study of medical terminology during the Latin language classes that has a high professional significance.

Acquiring terminological competence for future physicians is a priority, as long as the fluency in terminology is a condition for further successful professional communication. Fluency in terminology testifies to the knowledge and understanding of professional concepts and phenomena, is an indicator of the culture of professional speech of a specialist, the condition for his/her professional growth [2, 3].

Modern education needs to update the training of specialists, in which they will be able to develop and improve their knowledge and form terminological competence through distance learning and electronic learning platforms. The implementation of distance learning for students can occur mainly with the operation and support of the e-learning platform Moodle [4; 5]. This

software is built in accordance with the standards of information educational systems, provides access to the many resources needed by the student to study the necessary information, allowing the teacher to input materials of any complexity into the system.

THE ANALYSIS OF RECENT RESEARCH AND PUBLICATIONS

D. Bobova, L. Viktorova, Z. Gyrych, N. Holub, H. Onufrienko, I. Drozdova, M. Guts, and Ya. Yanush dealt with the issue of the formation of terminological competence. Methodical principles of work on mastering the terms are covered in the researches of M. Baranov, O. Horoshkina, T. Donchenko, A. Nikitina, M. Pentyliuk.

The issue of using the Moodle system is very relevant, especially during the active implementation of distance learning. The system of distance education based on the Moodle platform was created on the basis of socially constructive pedagogy, which today attracts the attention of many researchers and university teachers, such as B. Demyda, N. Fedchyshyn, S. Sahaidak, S. Sysoyeva, K. Osadcha, V. Vysochanskyi, L. Klakovych, P. Kushchak and others.

UNRESOLVED ASPECTS OF THE PROBLEM

In our article, the emphasis is made on the process of studying medical terms for medical students using the Moodle platform. The direct electronic environment gives them the opportunity to form their professional and terminological competence. The teacher has the opportunity to observe the learning process and control it.

Most scholars consider various aspects of the problem of using the latest innovative technologies in the educational process, noting the increasing role of e-learning means at all stages of the educational process, but the possibilities of the use of the electronic platform Moodle in the process of formation of professional terminology competence in Latin is insufficiently studied and therefore determines the relevance of the selected topic.

AIM

The aim is to analyze the possibilities of using the electronic system Moodle for the formation of professional and terminological competence of medical students during the study of terminological competence for improving the quality of medical education.

MATERIALS AND METHODS

The research used a number of scientific methods: general scientific (analysis, synthesis, generalization), specific research and others which ensured the selec-

tion and analysis of the source base, made it possible to determine the general trends in the study of the problem of using the electronic system Moodle for the formation of professional and terminological competence of medical students during the study of terminological competence for improving the quality of medical education.

REVIEW

The issues of professional training of a specialist who has perfect professional knowledge, skills and abilities are becoming important. One of the aspects of professional competence of medical students is the study of professional medical terminology [3]. Medical students must acquire such a set of qualities during their studies, thanks to which they will be able to become real professionals. To meet the professional needs and ensure the proper culture of professional communication, the future specialist in the medical field needs to adopt a lot of new terms. Fluency in the professional terminology is an indicator of thorough training of a specialist. Poor knowledge of medical terms causes students' inability to adequately perceive and properly handle special medical literature. An important condition for the successful study and mastering of the disciplines of the medical profile and the students' gaining general professional training is their formation of terminological competence at the lessons of Latin [4].

L. Viktorova notes that being terminologically competent presupposes the ability of a specialist to use the terms accurately and correctly in professional communication [5, p. 166]. Terminological competence is the ability of a specialist to demonstrate proper personal qualities in the situations of professional communication by mobilizing the knowledge of professional terminology.

With the mastery of professional speech by a specialist, the construction of a system of general and professional knowledge begins. To be fluent in oral and written forms of professional communication, medical workers must have a considerable lexical stock of the professional terminology. Assimilation of the language of the profession, and hence the formation of worldview and professional competence of future specialists begins in higher educational institutions. Students have high requirements, which are not only in the advanced knowledge of the profession, but also in a high level of mastery of medical terminology and its fluent use in professional activity. The ability to communicate in the language of the profession promotes the rapid mastery of special

disciplines, increases the efficiency of work, and helps to establish business contacts [6].

Mastering any profession takes place in the process of successive mastering of professional language, including the system of special concepts and terms that form its basis. The specificity of medical terminology lies in the centuries-old use of Latin and terms in the professional activity not only of medical professionals, but also of scientists of all fields of knowledge. The importance of Latin medical terminology in the formation of terminological competence in medical professionals is undoubtedly extremely important, because it is from its mastery that the professional education of the future physician begins. Knowledge of the basics of Latin grammar, special vocabulary and basic Greek-Latin vocabulary provides terminological competence of a specialist and at the same time it significantly increases his/her general cultural level. A well-founded study of medical terminology helps to master the concepts used in the professional activity of the future doctor and provide for his/her proper literacy. Conscious assimilation of terms, selection of word-forming morphemes in them and understanding of their meanings give an opportunity to memorize terms and explain the meaning of unfamiliar words by using the knowledge of basic elements of terms.

Terminological competence is based on Latin language classes, which are part of the integrated process of teaching future physicians. As you know, ancient Greek and Latin are the main international sources for the formation of new terms in all fields of medicine and biology. Knowledge of terms of Greek and/or Latin origin, the basics of Latin grammar helps students in reading medical literature and studying special subjects.

We must not ignore the fact that the modern system of higher medical education involves the active use of information base available only through the Internet. The ability to understand information on special Internet sites, which tell about the latest advances in medicine, new methods of treatment of various diseases, directly depends on the level of terminological competence of future health professionals. The ability to independently form terminological combinations provides adequate entry into the socially significant space of communication and increases the professional culture of the specialist.

The formation of terminological competence of the future physician is a systematic, well-organized and purposeful work related to all sections and topics of the courses "Latin" and "Latin and medical terminology" in combination with the study of other disciplines taught in higher medical institutions.

USE OF ELECTRONIC SYSTEM MOODLE FOR FORMATION OF TERMINOLOGICAL COMPETENCE

Modern teaching materials in Latin for the study of professional vocabulary are designed to have a positive motivating effect on those who learn the language and at the same time create conditions for those who are taught to perform tasks and exercises freely and confidently. Achieving this goal is possible due to the novelty and variety of the proposed material, attractive content and interesting presentation of the material, including modern topics, fascinating stories, problems and illustrations. In recent years, training in the world is increasingly taking place not only in class, but in combination with distance education. Therefore, teachers must use a variety of information technologies to teach their disciplines, because the informatization of education greatly simplifies organizational, educational and other activities and opens a wide range of new opportunities in education. V. Bykov notes that the penetration of information and communication technologies in the educational process creates preconditions for radical renewal of both content-target and technological aspects of education, which is manifested in significant enrichment of didactic methods, teaching aids and on this basis the formation of non-traditional pedagogical technologies based on the use of computers [6]. Thanks to the latest technologies, the role, method, speed and efficiency of using information in the learning process are changing. Thanks to the means of communication it is possible to obtain information and knowledge at a distance. The learning environment can no longer be characterized according to the traditional scheme, when its participants are either a teacher and a student, or a teacher and a group of students. The number of participants in a particular educational process becomes potentially unlimited [7].

DISCUSSION

At I. Horbachevsky Ternopil National Medical University we actively use the e-learning system Moodle (Modular Object Oriented Distance Learning Environment), to which there is free and unrestricted access. Using this program, the student takes on the role of an active subject who independently acquires knowledge, forms his/her own system of skills, of course with the help of certain sources, and the role of the teacher in this scheme is to motivate and support learners, prepare information sources used in self-study, etc. [8].

The Moodle e-learning system provides students and teachers of Latin with a wide range of didactic opportunities to use a variety of educational and meth-

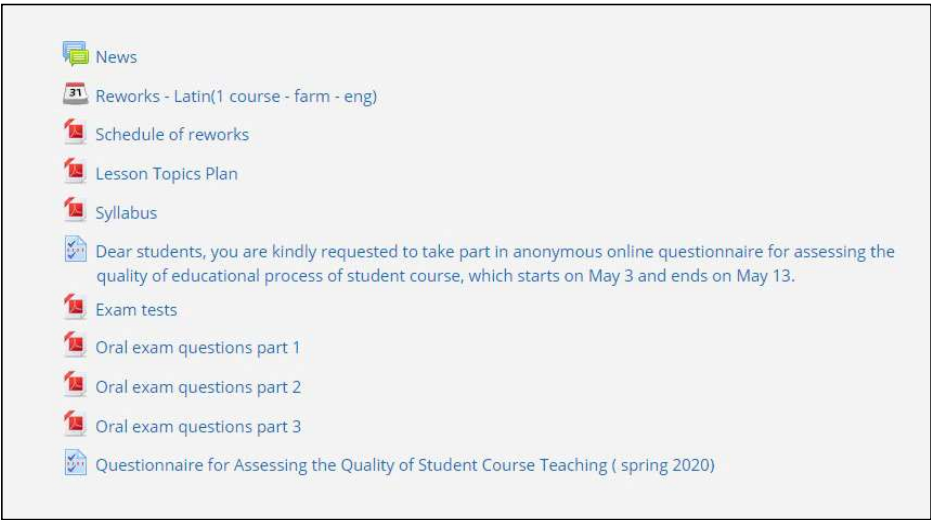


Fig.1. Content of the Latin language course.



Fig.2. Sample structure of the module of activity "Lesson"

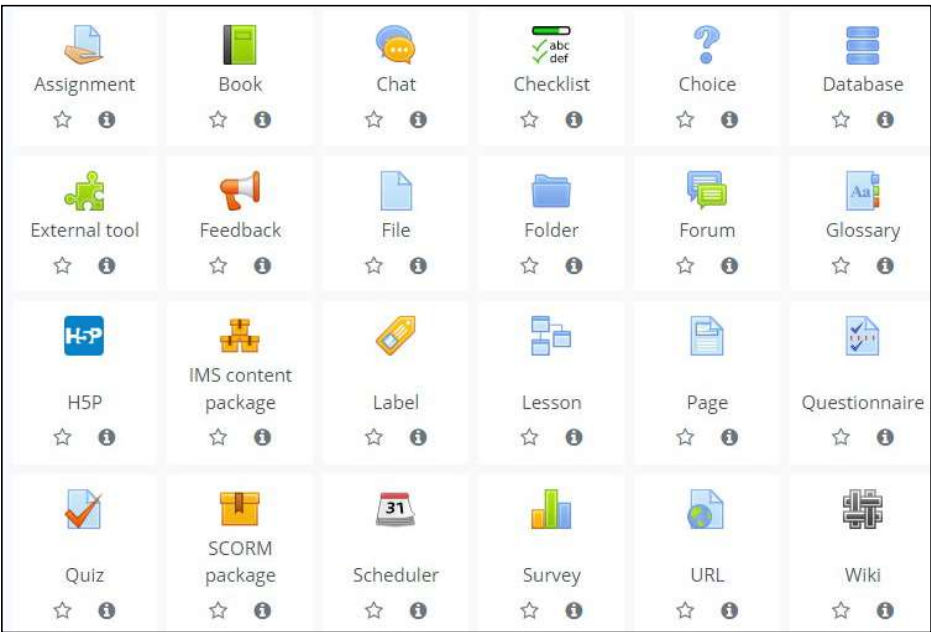


Fig. 3. Tools for learning new terms and communicating with the teacher

odological materials for the formation of terminological competence.

The development of teaching materials in Latin in the electronic educational environment Moodle expands the pedagogical capabilities of the teacher, allowing flexible use of author's materials in Latin to achieve the goals of the educational program. Access to the educational and methodical materials in the electronic environment provides the student with an opportunity to independently plan and manage the educational

activity according to individual needs and the chosen trajectory of studying of Latin medical terminology.

With the help of the Moodle system, each teacher has the opportunity to create their own course of the subject. In this course, the teacher provides all the necessary information, distributes a large list of links for a particular module with subheadings or pictures; shows embedded audio or video files directly on the course page; attaches instructions and a brief description of the content of the course section [9].

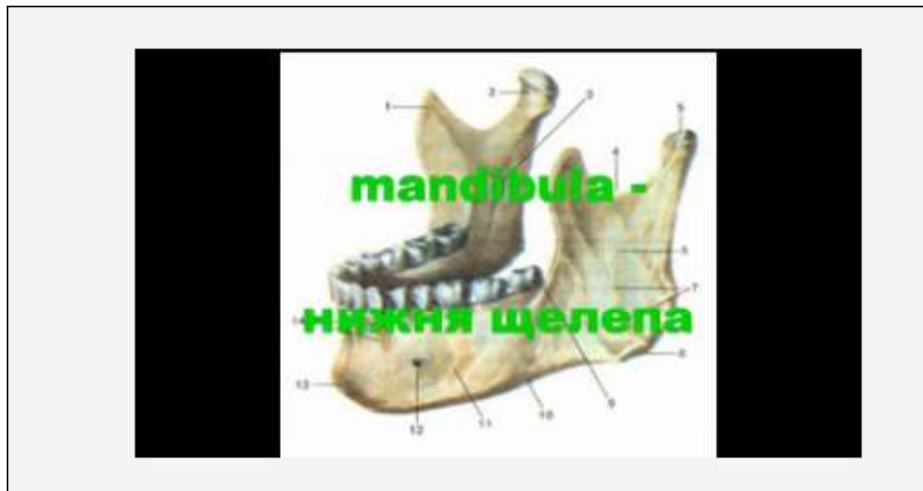


Fig. 4. Sample image attached to the dictionary article of the glossary "mandibula"

Питання 1
Відповіді ще не було
Макс. оцінка до 1,00
Відмітити питання
Редагувати питання

Визначіть варіант правильного написання латинського терміну "гліцирріза":

Виберіть одну відповідь:

- ☐ a. glycyrrhiza
- ☐ b. glycyrrhiza
- ☐ c. glycyrrhiza
- ☐ d. glycyrrhiza
- ☐ e. glycyrrhiza

Питання 2
Відповіді ще не було
Макс. оцінка до 1,00

В якому рядку правильно написаний латинський термін "етер етілікус":

Виберіть одну відповідь:

- ☐ a. Aether aethylicus

Fig. 5. Sample test for final control

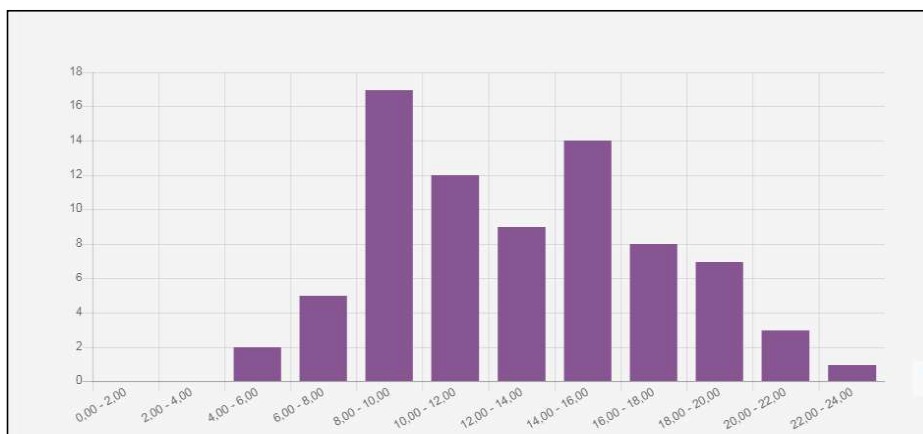


Fig. 6. Range of assessment of the total number of students

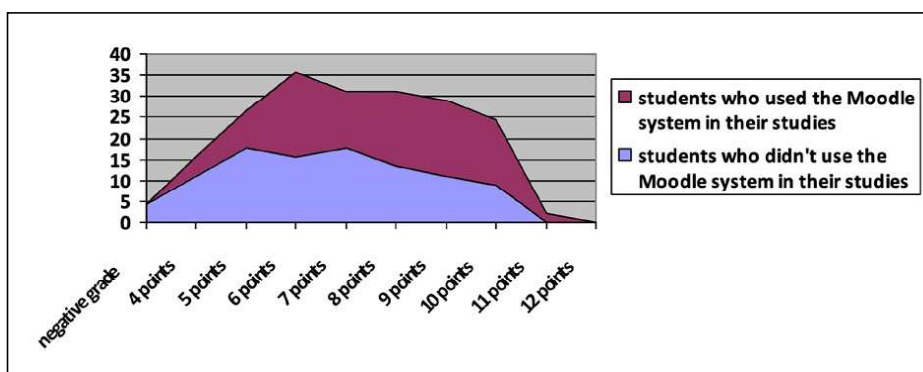


Fig. 7. Comparative diagram of students' progress

The Moodle system offers a variety of ways to provide learning material, test knowledge and monitor performance. For medical students studying Latin, this program will be useful in learning new professional terminology and developing reading and writing skills, in particular, it is advisable to upload additional exercises for better learning, grammar and lexical tests, as well as texts for reading.

For example, starting to study pharmaceutical terminology, first-year students of the Faculty of Pharmacy in the relevant course "Latin" can first get acquainted with the work program of the subject, thematic lesson plans, sample tests for the exam at the end of the subject (Fig. 1).

The whole course is divided into "Classes" or "Topics". The Lesson activity module allows the teacher to present the study material and practical learning activities in interesting and flexible ways. The structure of each topic includes materials for practical classes, guidelines, links to videos and tests for final control (Fig. 2).

The versatility of the platform allows to provide a full range for student self-education and the formation of terminological competence both in classrooms and remotely. After all, the teacher can teach all the additional materials, add video and audio materials with the presentation of the most necessary medical terms and their explanation <https://moodle.tdmu.edu.ua/mod/page/view.php?id=148549>.

The main tools that allow learners to communicate with each other are as follows: a forum (common to all learners on the main page of the platform, as well as various private forums); Email; exchange of attached files with the teacher; chat; exchange of personal messages (Fig. 3).

The Glossary module allows participants to create and maintain a list of terms and their definitions in the form of a dictionary, collect and organize resources or information data. The teacher can allow the addition of files that will be attached to dictionary entries in the glossary. Attached images are shown in the dictionary article (Fig. 4). Glossary articles can be viewed alphabetically, by section, by date or by author. Dictionary articles can be approved by default before being shown to everyone and do not require teacher approval. The teacher can allow the addition of comments to dictionary articles [10].

The Moodle learning environment includes tools for managing, self-learning, communicating, and assessing student learning. Thanks to the platform, the teacher can remotely control the educational process of students both individually and collectively [11, p. 100]. The Moodle system has certain advantages of using it for evaluation, because as a result of performing certain

activities, the result of this performance is evaluated, rather than the student as a person. Besides, penetration of elements of subjectivism into the evaluation is made impossible.

For example, the use of the task "Test" is widespread when completing a block of one topic or several topics (Fig. 5). The test consists of various questions selected from the database of questions: with one answer, many options or the ability to enter your own option [12]. It is very easy for a teacher to summarize and evaluate a student without spending time at the lesson or during distance learning. Computer testing is one of the most effective means of control in learning. Testing as a method of pedagogical measurement consists in quantitative measurement of the level of knowledge, skills, and abilities for the purpose of assessment. The tool of such measurement is a test – a system of tasks of a specific form, content, arranged in increasing complexity.

The use of tests is effective for improving the terminological competence in professional vocabulary. The new way of presenting the material allows to study the terms not only by performing traditional training exercises, which are presented in the classroom, but also offers the use of a variety of electronic resources [13, 14, p.99]. The introduction of electronic testing at Ternopil National Medical University as an element of learning new terms helps to supplement the existing standard forms and methods of teaching and to modernize the methods of control of students' knowledge. When preparing and conducting testing on the Moodle platform, the teacher can use its capabilities, through which he/she organizes the verification of the studied material so that the forms of learning correspond to the goals and objectives of specific classes.

Computer tests are perceived positively by students, because the verification of results is automatic, and therefore, the influence of the human factor is excluded. In addition, as it turned out, such tests contribute to better learning of new terms, because in the future students can easily reproduce examples of them. Furthermore, they receive a score immediately upon completion of the test, which also contributes to a better perception of such tests on an emotional level. These elements of the application of the Moodle system for the formation of terminological competence are extremely effective. Students can use as much learning materials as they need to memorize new professional terminology and this greatly facilitates the control of students' learning activities. These elements allow to track the work of each student individually and the quality of its implementation, as well as to encourage students to work more effectively. This significantly saves the teacher's time due to automatic verification.

After doing the tests, the teacher can also analyze the performance of students from the relevant chart (Fig. 6).

The method of organizing the process of knowledge control depends entirely on the teacher – tests can be at the end of each topic, and a presentation can be created only with test tasks, which can be placed at the end of each structural section of the course.

If the test is for self-examination, time limits are not appropriate. If the knowledge of a module or topic is being tested and graded, attempts to take the test at home using an abstract should be prevented. Then the start time and end time of the test are set, after which the teacher must immediately record the grades. There may be a requirement for the student to successfully pass the test before moving on to the next topic. Then you can only set the “Time limit (minutes)” without setting the start and end of the test and thus allowing it to be done from anywhere.

The “Random order of answers” option provides for random mixing of items within the question for each attempt. In the “Attempts” section, the “Allowed” option can limit the number of test attempts.

In the remote Moodle platform for the course there is a general list of test questions (“Question Bank”), which belong to hierarchically ordered categories (button “Questions on the course control panel”). You can combine different tests from the course questions. You can view the test results on the appropriate page. The system collects data on the date and time of the test, the student, the course / lecture where the test task was placed, and the overall grade obtained.

For our study, we analyzed the effectiveness of using the electronic system Moodle for the formation of terminological competence of first-year students (specialty 226 “Pharmacy”) at I. Horbachevsky Ternopil National Medical University in 2021-2022 academic year.

90 students studied in the first year of the Faculty of Pharmacy. We divided them into two groups. 45 students studied grammar material and course vocabulary without using the Moodle system. 45 students used the electronic system while studying each topic of the course and assessing the mastery of vocabulary. After completing the discipline, students wrote a final test to verify the mastered Latin medical terms.

As can be seen from the data shown in the diagram (Fig. 7), the success of students who studied the discipline “Latin” using the Moodle system has increased significantly.

CONCLUSIONS

Fluency in medical terminology is a condition for successful professional communication of future

specialists. Among the types of professional competence, the analysis of terminological competence deserves special attention, because in-depth general knowledge and professionally oriented speech skills affect the language of the profession, especially its terminological system. Thus, the formation of terminological competence of future medical workers involves mastering special terminology in Latin classes, as a prerequisite for further use of acquired knowledge in other disciplines, as well as literacy in professional terminology. Terminological competence, which students acquire while studying Latin terminology, is the main one in their further professional and scientific activities.

When creating educational and methodological complexes for the formation of terminological competence, the means of teaching, as well as the ways of presenting educational material and the principles of organizing the educational activities of students become important. The electronic platform Moodle, which has a wide range of resources for teaching and testing, is able to expand the communicative competencies and skills of students needed to effectively master professional Latin terminology. The Moodle system has the optimal set of resource opportunities for the implementation of blended learning – classroom and extracurricular, which is its main advantage. The following advantages of the Moodle system include: accessibility and unlimited number of users (creation of a virtual community of students and teachers to implement learning management strategies); creation of conditions for independent work (availability of a real educational process “without leaving home” provided that there is access to the Internet or in a computer class); individualization of learning (reproduction of a student as a person in his/her individual experience, taking into account the characteristics of each student); development of cognitive interests, activation of creative potential of the student (motivates to awaken and keep the interest of the individual in active learning activities), instant feedback between teacher and student. Using the Moodle platform for teaching Latin and medical terminology, teachers can create an environment for lifelong learning with unlimited control, modification, archiving, viewing, etc., and most importantly – for close interaction between students and the teacher.

The possibilities of using the electronic platform Moodle for the formation of terminological competence in the study of Latin described in the article do not cover all the problems concerning the efficiency of mastering by students the professional terminology, and that creates perspective for further scientific research.

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CONFLICT OF INTEREST

The Authors declare no conflict of interest

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