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## USING PROJECT-BASED LEARNING TO TEACH LATIN AND GREEK MEDICAL TERMINOLOGY

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### ВИКОРИСТАННЯ ПРОЕКТНОГО НАВЧАННЯ ПРИ ВИВЧЕННІ МЕДИЧНОЇ ТЕРМІНОЛОГІЇ ЛАТИНСЬКОГО І ГРЕЦЬКОГО ПОХОДЖЕННЯ

**Abstract.** The article reveals the role and importance of the project method of Latin teaching; to represent the sample of the project “Latin and Greek medical terminology and their corresponding national equivalents in English”.

The basic terminology competence of medical students is formed in Latin lessons because Latin vocabulary is used in Anatomy, Histology, Chemistry, Biology, as well as further clinical disciplines. Thus, the principle of close interdisciplinary integration helps students better understand the nature of the anatomical, histological, pharmaceutical, and clinical terms.

Project-based learning to teach Latin and Greek medical terminology contributes training in logical thinking, boosting cognitive processes essential for medicine, and causes the development of research and creative skills of medical students, the ability to independently construct their knowledge, navigate the information space and think critically.

It has been found that the use of project learning combined with all necessary elements of co-operating training of future medical workers greatly facilitates their creative training, development of communicative skills and contributes to independent decision-making.

The efficient using project-based learning to teach Latin and Greek medical terminology in higher medical educational institutions in combination with conventional teaching and technical support provides the highest quality of the educational process.

**Key words:** Latin and Greek medical terminology; Latin and Greek borrowings; a project method; medical students.

**Анотація.** У статті розкрито роль і значення проектного навчання при вивченні медичної термінології латинського і грецького походження; розроблено зразок проекту «Латинська та грецька медична термінологія і відповідні їм еквіваленти англійською мовою».

Основна термінологічна компетентність студентів-медиків формується на заняттях латинської мови, оскільки латинська лексика використовується в анатомії, гістології, хімії, біології, а також у клінічних дисциплінах. Таким чином, принцип тісної міждисциплінарної інтеграції допомагає студентам краще зрозуміти природу анатомічних, гістологічних, фармацевтичних і клінічних термінів.

З'ясовано, що використання проектного навчання у поєднанні з усіма необхідними елементами кооперативного навчання майбутніх медичних працівників значно полегшує їх творчу професійну підготовку, розвиток комунікативних навичок та сприяє самостійному прийняттю рішень.

Застосування проектного навчання при викладанні латинської та грецької медичної термінології сприяє підготовці логічного мислення, активізації когнітивних процесів, необхідних у галузі медицини, розвитку дослідницьких і творчих навичок студентів-медиків, здатності самостійно конструювати свої знання, орієнтуватися в інформаційному просторі та думати критично.

Ефективне використання проектного навчання при викладанні латинської та грецької медичної термінології у вищих медичних навчальних закладах у поєднанні з традиційним навчанням і технічною підтримкою забезпечує найвищу якість навчального процесу.

**Ключові слова:** латинська та грецька медична термінологія; латинські та грецькі запозичення; метод проектів; студенти-медики.

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**Introduction.** Today, cross-cultural communicative competencies are increasingly important for mutual understanding and cooperation. Our medical students' need to be able to communicate with their neighbours, here and abroad. Learning Latin and Greek medical terminology (anatomical, pharmaceutical and clinical) helps them to communicate and collaborate with professionals of all countries.

Thorough learning of Latin and Greek medical terminology contributes training in logical thinking, boosting cognitive processes essential for science, engineering, and medicine. The study of Latin and Greek medical terminology at a medical university pursues a purely professional purpose – to prepare a terminologically competent doctor. Students learn how to think systematically by learning Latin and Greek medical terminology. They can approach any new subject with greatly enhanced learning skills. Therefore, the option and use of teaching methods, finding the perspective directions of activation the educational process, selection of priority forms of work in Latin lessons is primarily the task of a teacher. Project-based learning to teach Latin and Greek medical terminology is one of the most productive among teaching methods. It causes the development of cognitive, creative skills of medical students, the ability to independently construct their knowledge, navigate the information space and think critically.

**The aim** – to reveal the role and importance of the project method of Latin teaching, to represent the sample of the project “Latin and Greek medical terminology and their corresponding national equivalents in English”.

**Theoretical framework.** The basic terminology competence of medical students is formed in Latin lessons. Thus, it is necessary to accumulate and expand the Latin vocabulary during studying the basic subjects in junior courses (Anatomy, Histology, Chemistry, Biology), as well as further clinical disciplines of the therapeutic and surgical profile.

The principle of close interdisciplinary integration helps students to understand better the nature of the anatomical, histological, pharmaceutical, and clinical terms. The terminological content of Latin classes in the first semester, including the anatomical and histological vocabularies, is active for first and second-year students who study Anatomy and Histology. Such an approach is fully justified since it provides an opportunity to achieve maximum integration “anatomy ↔ Latin”, “histology ↔ Latin”.

Lexical minimum of the first semester becomes passive for senior students. The lexical minimum of the second semester is activated when students study Pharmacology, Microbiology and clinical subjects at the 3rd year, writing disease histories with the inclusion of diagnostic names, laboratory findings, etc. In this case, we are talking about the transformation of the active lexical minimum into the passive and vice versa. It is determined by the main criterion of selection – the semantic value of the lexical unit in various branches of educational activity.

Students learn the meaning of Latin nouns, adjectives, adverbs and verbs that are used as the base of English medical terminology. They learn prepositions, many of which are used as prefixes in both Latin and English, as well as various Latin suffixes that always denote a particular part of speech. This understanding of word formation helps students to decipher the meaning of unfamiliar words [5].

The learning process of the new lexical material begins with the disclosure of the values of the new lexical units. The teacher and most foreign students use the principle of bilingualism: the Latin word/term → English equivalent.

Although students from the Middle East, Arab countries, and India, trigger the principle of trilingualism when the lack of English language skills prompts them to make notes in their native language (Arabic, Hindi, etc.) along with a “Latin-English term” [1].

The meaning of Latin lexical units can be disclosed by one-word translation (*nasus* – nose; *dentalis* – dental; *ligamentum* – ligament), two-words translation with English medical term, borrowed from Latin without changes and commonly used word (*morbus* – morbus, disease; *maxilla* – maxilla, upper jaw; *incus* – incus, anvil), and multi-word translation units (*os* – bone, mouth, oral cavity; *margo* – margin, border, edge; *fasciculus* – fasciculus, fascicle, small bund, bundle).

Medical students can translate the lexical units by demonstration of objects, drawings, photos, paintings, gestures, etc., or by explanation the meaning of the lexical unit with the help of already known words in English (*tabuletta* (tablet) – a small piece of solid medicine with suitable excipients that is prepared either by molding or by compression; *unguentum* (ointment) – a smooth substance that you rub on the skin to heal a wound).

The above methods of translation have their advantages and disadvantages. The advantage is that most of the English vocabulary, and especially medical terminology, has Latin and Greek origin. The main

disadvantage is primarily due to the unequal level of language training of foreign students [4].

The presence of different ethnic, national and social groups among foreign students with significant differences in culture, religion, life experience complicates the relationship between foreign students and affects the organization of the educational process.

Latin is a language of professionally oriented learning. Thus, it has a special role, which determines the search for innovative technologies, the choice of priority forms of work, and the finding of perspective directions of activation of the educational process.

Therefore, great attention should be paid to the training of students in a team (cooperative learning), the development of communicative skills and independent decision-making ones.

A project method is one of these methods, which enriches the educational process significantly, not only in secondary schools but also in higher educational institutions. The use of the project method changes the traditional approach to teaching because it is aimed at the development of cognitive abilities of medical students, the formation of skills to independently find ways of solving certain tasks through various forms of activity.

The project method is a system of independent, coordinated, integrated, communicative and cognitive activities aimed at achieving a practical result – a project. It gradually gets complicated and contributes to the usage of different methods, on the one hand, also facilitates integrating knowledge and skills from different fields of science, develops the capacity for self-organization, self-development, self-perfection of a future professional, from the other hand. A project is a constituent of project-based learning, which is a creative, an innovative activity aimed at creating objectively and subjectively a new product called a project [3].

The research method was introduced in the syllabus. So, students could learn at university to work independently and combine theory with practice. It is an educational enterprise in which students solve a practical problem over a period of time. The teacher may suggest a project, but mostly they are planned and executed as far as possible by the students themselves, individually or in groups.

The future professionals can be learned with the help of project method [2]:

- to reveal and determine scientific and practical problems;
- to lead their analysis;

- to find some ways of their solution;
- to develop some abilities to work with the information;

- to find the necessary source, for example, some facts in the reference literature or in the mass media;
- to use the information which they receive with the aim to solve given assignments.

The structure, purpose, and objectives of the project are the basis for making up its plan. As an example, let's give the contents and course of the project “*Latin and Greek medical terminology and their corresponding national equivalents in English*”, which is constructed on the principle of the game.

The number of hours: classroom time – 6 hours, the extracurricular time – unlimited.

*Aim* – to enrich the vocabulary based on Latin and Greek medical terminology; to explain the importance of learning Latin for students of higher medical educational institutions, the role of classical languages in medical terminology development; to develop the students' monologue and dialogue speech habits; to develop the reading, translating, monologue and dialogue speech habits of students; to understand the importance of Latin learning and its usage in the future career; to increase motivation to get new knowledge and skills; to develop research and creative abilities of the personality; to bring up feelings of responsibility, self-discipline, and self-organization; to realize the meaning of teamwork; to perform a comparative analysis of Latin-Greek medical terminology and their corresponding national equivalents in other languages.

*Professional orientation:* The usage of Latin and Greek medical terminology in the physician's professional activity.

*Key question:* What is the role of Latin/Greek medical borrowings in the development of Latin vocabulary and their corresponding national equivalents in other languages?

*Thematic questions:*

I. Latin borrowings in English:

1. Latin borrowings of the first centuries BC, that is, before the arrival of the Angles and Saxons to the British Isles (so-called first layer of Latin borrowings).
2. Latin borrowings of the 6th-7th centuries, that is, the era of the introduction of Christianity in England (so-called second layer of Latin borrowings).
3. Latin borrowings of the 15th-16th centuries, that is, associated with the Renaissance (so-called third layer of Latin borrowings).

II. Greek borrowings in English:

1. The etymological structure of the English vocabulary on the basis of Greek borrowings.

2. Sources of Greek borrowings.

3. Greek borrowings in the English medical terminology and their corresponding national equivalents in other languages.

*Methodical recommendations.* It is important to focus students' attention on professional terminology, and to create optimal conditions for interactive learning. Students are divided into two groups. The first group prepares the project "Latin borrowings in English" and the second one makes the project "Greek borrowings in English".

To do a comparative analysis of Latin and Greek medical terminology and corresponding national equivalents of other languages.

To prepare a post or booklet "The role of the Latin/Greek borrowings in the development of the English vocabulary" (for each group).

*Project characteristics:* interdisciplinary, research; it is carried out in accordance with a textbook and materials of the Department under the supervision of the teacher.

The project consists of two parts. In the first part, students make up information about the topic.

In the second part, they prepare a written report according to the thematic questions, create presentations and design a booklet or a poster.

*The recommended form of project presentation and protection:* "a round table".

*The final product of the project:* a written report according to the thematic questions, created presentations and videos, a designed booklet or poster with possible solutions proposed by the students.

The research method helps future physicians to develop and form necessary skills in all kinds of Latin

practice, to enhance their motivation to learn Latin and Greek medical terminology and to make it more interesting and effective. It ensures an opportunity of medical students for self-expression on Latin training lessons and creates positive motivation and favourable conditions for controlled by the teacher and self-controlled independent Latin learning.

**Conclusions and Prospects for Research.** The effectiveness of teaching of Latin and Greek medical terminology in higher medical educational institutions depends on the innovative approaches and methods, the choice of priority forms of work, and the created conditions for students' independent research by the teacher. Therefore, great attention should not be paid to the solving only educational tasks, but for the training of students in a team (cooperative learning), the development of their communicative skills, and encouraging them to develop independent decision-making ones. The efficient use of the project method in teaching Latin and Greek medical terminology in higher medical educational institutions will help to develop research and creative abilities of students, to bring up feelings of responsibility, self-discipline, and self-organization, to reveal the creative potential of personalities, to promote the formation of future professionals in a certain field. Thus, using project-based learning to teach Latin and Greek medical terminology in combination with conventional teaching and technical support provides the highest quality of the educational process.

Prospects for further research of using project-based learning to teach Latin and Greek medical terminology, we consider in a deeper analysis of the problem of its using during the teaching professionally oriented disciplines in the higher medical institutions.

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