INNOVATIVE METHODOLOGICAL SYSTEM FOR TEACHING LATIN AND MEDICAL TERMINOLOGY IN HIGHER MEDICAL EDUCATION INSTITUTIONS: PROBLEMS AND SOLUTIONS

M.X. Atamirzayeva
Lecturer, Department of Language Teaching in Medicine,
Kokand University Andijan Branch

Abstract

This article is devoted to optimizing the process of teaching Latin and medical terminology within the modern system of medical education. The relevance of the study lies in the fact that the traditional grammatical approach is insufficient for developing students' clinical thinking and terminological competence.

The aim is to develop integrated methodological recommendations aimed at improving students' professional terminological literacy and to experimentally evaluate their effectiveness.

A total of 120 first-year students participated in the study. They were divided into control (traditional) and experimental (innovative) groups. In the experimental group, the "clinical-terminological model," mnemonics, and digital gamification methods were applied. Students in the experimental group demonstrated higher performance: 28% improvement in mastering anatomical terms, 32% in applying clinical terminology, and 40% in prescription writing. Minimizing grammar instruction while strengthening etymological analysis and interdisciplinary integration in teaching Latin significantly improves the quality of education.

Keywords

Medical terminology, clinical integration, mnemonics, prescription writing, pedagogical technologies, Nomenclatura Anatomica.

INTRODUCTION

Latin and medical terminology constitute the alphabet of the medical profession. Historically, Western medicine was nurtured in the cradle of Greek and Roman civilization, and even today Latin and Greek terminology serve as the language of communication for the global medical community and the World Health Organization (WHO).

However, a serious paradox is observed in 21st-century medical education. On the one hand, international anatomical and pharmacological nomenclature (Terminologia Anatomica, Pharmacopoeia Internationalis) is entirely based on Latin. On the other hand, first-year students admitted to medical universities often perceive this subject as a "dead language," an "extra academic burden," and a discipline "detached from clinical practice."

Long-term observations indicate that traditional teaching methodology is excessively theoretical. Students spend 60–70% of their time memorizing complex grammatical rules such as the five declensions of nouns and the degrees of adjectives. As a result:

1. A student may know the declensions of the word *"Musculus,"* yet cannot imagine its function and location in the human body.
2. When moving to clinical disciplines (e.g., Propedeutics of Internal Diseases), students tend to memorize terms such as *"Gastritis"* or *"Hepatitis"* mechanically without understanding their meanings.
3. They make significant errors in writing prescriptions, which may potentially threaten patient safety in their future professional practice.

The main objective of this study is to develop and implement a "**Clinical-Terminalogical Integration**" model for teaching Latin in higher medical education institutions. According to our hypothesis, if Latin is taught not as a purely linguistic discipline but as an "introductory subject to medicine," students' academic performance and motivation will increase significantly.

METHODS AND MATERIALS
The study was conducted at the Kokand University Andijan Branch during the autumn semester of the 2025–2026 academic year.

Participants: A total of 120 first-year students from the "General Medicine" and "Pediatrics" programs participated in the experiment. They were randomly assigned to two groups:

- **Control Group (CG – 60 students):** Taught according to the standard curriculum using the traditional grammar-translation method.
- **Experimental Group (EG – 60 students):** Taught based on new methodological recommendations developed by the author.

Experimental Methodology (Intervention): In the experimental group, a methodological system consisting of four key components was implemented:

A. Structural-Semantic Analysis ("LEGO" Method):
Instead of rote memorization, terms were taught by decomposing them into structural components. In each lesson, students constructed medical terms using prefixes, roots, and suffixes.

Example: Pericarditis = Peri- (around) + *cardi-* (heart) + *-itis* (inflammation) → inflammation of the pericardium.

B. Visual Mnemonics:
Associative visual images were used to help students remember complex anatomical structures.

Example: Sella turcica ("Turkish saddle") – an image of a horse saddle was shown alongside the corresponding skull structure.

Example: Arachnoidea ("spider-web-like membrane") – explained through visualization of a spider web.

C. Interdisciplinary Synchronization:
Latin language classes were aligned with the calendar plan of the Anatomy department.

For instance, when the topic "Osteology" (bones) was covered in Anatomy, the Latin course simultaneously addressed "Names of bones and their formation," ensuring unity of theory and practice.

D. Digital Gamification:

Instead of traditional oral questioning, reinforcement activities were conducted through competitions on platforms such as Kahoot! and Quizlet using mobile phones. This reduced students' psychological fatigue and created a competitive learning environment.

Data Collection and Analysis:

The outcomes were evaluated in three stages:

Entry test to determine baseline knowledge.

Interim assessment in the form of a dictation on anatomical terminology.

Final assessment evaluating skills in clinical term analysis and prescription writing.

At the end of the experiment, the collected data were statistically analyzed, and the following results were obtained.

RESULTS AND DISCUSSION

Mastery of Anatomical Terminology: Students in the control group often struggled with correctly applying case endings of terms. In contrast, the experimental group demonstrated higher performance because they developed logical term-construction skills instead of relying on rote memorization.

Average score of CG: 71.4%

Average score of EG: 89.2% (Increase: +17.8%)

Clinical Terminology and Etymology: The greatest difference was observed in understanding clinical terms. Due to their strong mastery of Greek term-forming elements (TE – Terminological Elements), students in the experimental group were able to correctly interpret the meaning of unfamiliar disease names upon first hearing them.

Example: The meaning of "Hepatomegalia" was correctly identified by 45% of CG students, whereas in the EG this figure reached 92%.

Prescription Writing Skills (Pharmaceutical Terminology): The most common error in prescription writing is forgetting to use the drug name in the Genitive case.

Grammatical errors in prescriptions (CG): 38%

Grammatical errors in prescriptions (EG): 8%
Errors sharply decreased in the experimental group because prescriptions were learned not as grammatical exercises but as a physician's directive algorithm.

Student Satisfaction Level: According to an anonymous survey conducted at the end of the semester:

95% of EG students agreed with the statement "Latin language classes are extremely important for my future profession" (compared to 60% in the CG).

The obtained results indicate that a methodological transformation is necessary in teaching medical terminology.

Why is the traditional approach ineffective?

In the traditional method, the primary emphasis is placed on linguistic rules (declensions, genders, degrees of adjectives). However, a physician does not need to be a linguist; rather, they need to read, understand, and write medical terms correctly. Excessive focus on grammatical rules increases students' cognitive load and distracts them from the main objective—mastery of medical terminology.

The Power of Clinical Integration:

As illustrated in the diagram above, Latin is not an "isolated island," but rather a bridge connecting the disciplines of Anatomy, Histology, Pathology, and Pharmacology. In our experiment, parallel teaching (synchronization) with Anatomy created an "aha-moment" (moment of comprehension) for students. After memorizing the word "Humerus" in Latin and then holding the actual bone during the Anatomy class the next day, their knowledge became firmly consolidated.

The Importance of Etymological Analysis:

When a student understands the root meaning of the words "Cancer" (Latin: crab) and "Carcinoma" (Greek: karkinos – crab), they simultaneously become acquainted with the history of medicine. This increases their interest in the subject. For example, learning the origin of the word "Muscle" (Musculus – "little mouse")—since ancient Romans compared muscle contractions under the skin to a mouse running—creates a memorable and lasting association in the student's mind.

The Digital Generation and Education:

Today's students are visual learners. For them, obtaining information through colorful applications and interactive games is easier than from black-and-white textbooks. Platforms such as Kahoot and Quizlet proved effective not only as assessment tools but also as instructional tools.

CONCLUSION AND METHODOLOGICAL RECOMMENDATIONS

Based on the results of the study, the following methodological recommendations are proposed to improve the quality of teaching Latin and medical terminology in medical higher education institutions of Uzbekistan:

Curriculum Optimization:

Reduce the volume of purely grammatical topics (adjectives, pronouns, numerals) by 30%.

Use the freed hours to expand the sections "Clinical Terminology" and "Prescription Writing."

Interdisciplinary Integration:

Develop a "Unified Terminological Calendar" through collaboration between the Latin Language and Anatomy departments, ensuring simultaneous coverage of related topics.

Updating Methodological Resources:

Replace purely textual explanations in textbooks with visual schemes, infographics, and mnemonic illustrations.

Increase the number of "terminological constructor" (word-formation) exercises.

Digitalization:

Create a database of electronic tests and flashcards for mobile applications for each topic.

Teach terminology using 3D anatomical atlases (e.g., Essential Anatomy application).

Practice-Oriented Approach:

Train students to work with real "case histories" and "prescription forms."

Introduce case-study tasks that allow students to perform the role of a physician in simulated clinical situations.

The implementation of these recommendations will not only enhance the terminological literacy of future physicians but also contribute to their development as internationally competitive medical professionals.

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