



COMPARATIVE LEXICOGRAPHIC ANALYSIS OF THE CORPUS OF SCIENTIFIC PEDAGOGICAL TERMINOLOGY IN UZBEK LANGUAGE (BASED ON RUSSIAN-LANGUAGE MATERIALS)

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Abstract: General Background: The development of scientific terminology in a multilingual educational context is a complex and dynamic process influenced by various linguistic and cultural factors. Specific Background: In Uzbekistan, the formation of pedagogical terminology has been significantly shaped by Russian-language sources, leading to a mix of direct borrowings, calques, and original Uzbek terms. Understanding the mechanisms behind this terminology adaptation is crucial for linguistic standardization and effective academic communication. Knowledge Gap: While prior studies have examined general aspects of Uzbek scientific terminology, there is limited research on the specific lexicographic and corpus-based analysis of pedagogical terms derived from Russian. The degree of linguistic integration and the patterns of terminological formation remain underexplored. Aims: This study aims to conduct a comparative lexicographic analysis of the corpus of Uzbek pedagogical terminology formed from Russian sources, assessing borrowing, calcification, and original term creation. Results: The findings indicate that 45% of Uzbek pedagogical terms are transliterations from Russian, 30% are calques, and 25% are newly created Uzbek terms. While Russian continues to exert substantial influence, there is a growing trend towards national terminological development. Novelty: The study employs corpus-based methods and computational linguistic tools to provide a quantitative assessment of terminology adaptation in Uzbek pedagogy. This approach enhances understanding of language integration processes in academic discourse. Implications: The research contributes to

the field of lexicography and terminology standardization, offering insights for educational policy, linguistic planning, and further studies on multilingual scientific communication. Future research should explore the impact of English on Uzbek pedagogical vocabulary and the processes of terminological standardization across disciplines

Keywords: pedagogical terminology, lexicography, Uzbek language, corpus analysis, borrowing, calquing, linguistic standardization

1. Introduction

The development of scientific terminology plays a crucial role in ensuring effective communication within academic and educational communities. In multilingual contexts, such as Uzbekistan, the formation and adaptation of pedagogical terminology are influenced by linguistic interactions, primarily with Russian and, increasingly, English. Pedagogical terminology serves as the foundation for structuring and conveying knowledge in education, making its standardization and lexical accuracy essential for both educators and researchers.



Despite the importance of terminological consistency, the processes through which Uzbek pedagogical terms emerge, evolve, and integrate into academic discourse remain insufficiently explored[1].

The relationship between language borrowing, lexical adaptation, and terminological development has been extensively studied in linguistic and educational research. Borrowing and calcification, as common mechanisms of lexical expansion, allow a language to incorporate foreign concepts while maintaining linguistic integrity. In the Uzbek context, pedagogical terminology has evolved through a combination of direct borrowings from Russian, calques, and the creation of original Uzbek terms. The adaptation process is complex, as it involves phonetic, morphological, and semantic changes to accommodate new terms within the structure of the Uzbek language. Understanding these mechanisms is critical for linguistic planning and educational policy, particularly in light of Uzbekistan's efforts to strengthen the role of the national language in academia[2].

Although previous studies have examined scientific terminology in Uzbek, research focusing specifically on pedagogical terms and their formation remains limited. Most studies provide a descriptive analysis without quantitative assessments of terminological distribution and frequency. This research addresses that gap by employing corpus-based methods to analyze pedagogical terminology in Uzbek, using Russian-language sources as a reference point. By identifying the proportion of borrowed, calqued, and newly created terms, the study provides insights into the degree of linguistic dependence on Russian and the ongoing development of national academic vocabulary[3].

Methodologically, the study utilizes corpus linguistics and comparative lexicographic analysis to examine the structure and frequency of pedagogical terms in Uzbek. Data sources include the National Corpus of the Uzbek Language, the Russian National Corpus, Sketch Engine, and Google Scholar, allowing for a comprehensive assessment of terminological patterns. Computational linguistic tools, such as AntConc and Python-based NLP libraries, are employed to extract and analyze lexical data. This methodological approach ensures a systematic and replicable analysis of pedagogical terminology.

The findings reveal that while Russian continues to influence Uzbek pedagogical vocabulary, there is a gradual increase in the development of original Uzbek terms. The study's results contribute to the broader field of lexicography and linguistic standardization, offering valuable insights for educators, policymakers, and linguists. The implications extend to curriculum development, translation practices, and the promotion of the Uzbek language in academic contexts. Future research should further explore the influence of English on pedagogical terminology and investigate the standardization processes across different academic disciplines[4].

2. Materials and Methods

The study is based on corpus and comparative-analytical methods, and also includes elements of etymological analysis and contextual analysis.

Corpus method

The following electronic corpuses of texts were used for analysis:

National Corpus of the Uzbek Language (O'zbek Milliy Korpusi, OMK) - contains texts of scientific publications, educational materials and official documents in Uzbek.

Russian National Corpus (RNC) - the Scientific Texts section was used to identify Russian-language pedagogical terms.

Sketch Engine - a tool for analyzing corpus data used to identify the frequency of terms and their collocations.

Google Scholar - a database of scientific publications used to collect and analyze modern pedagogical terms.

Uzbek Research Corpus - a specialized corpus of Uzbek scientific texts created on the basis



of articles and dissertations published in Uzbek universities.

Comparative-analytical method

The method included:

Comparison of Russian- and Uzbek-language pedagogical terms in terms of origin, structure and usage.

Classification of terms by the method of formation: borrowings, calques, original Uzbek terms.

Analyzing terms in context - studying their use in scientific articles, teaching aids and pedagogical dictionaries.

Software tools

The following programs were used to process and analyze text data:

AntConc - a program for analyzing the frequency of terms and their contexts.

WordSmith Tools - a tool for studying collocations and term structure.

Python (NLTK, spaCy) - libraries for automatic text processing, used for lemmatization and term extraction.

Excel, SPSS - programs for statistical analysis of data and visualization of results. Pedagogical dictionaries, scientific articles, textbooks and dissertations in Uzbek and Russian languages were used for analysis.

3. Results

Analyzing the ways of formation of pedagogical terminology

Borrowing and transliteration

Direct borrowing from Russian is the most common way of forming Uzbek pedagogical terminology. Such terms retain their original morphology with minor phonetic changes[5].

Examples of unchanged borrowings:

methodology → metodika

pedagogy → pedagogika

innovation → innovatsiya

didaktika → didaktika

psychology → psixologiya

motivation → motivatsiya

intellect → intellekt

These terms borrowed from Russian (and through it from Latin and Greek) are widely used in the scientific and educational sphere of Uzbekistan without significant changes.

In some cases there is adaptation to the Uzbek phonetic system:

cognitive → kognitiv

competence → kompetensiya

communication → kommunikatsiya

modernization → modernizatsiya

There are also partial borrowings with the addition of Uzbek affixes:

testing → testlash (test + suffix -lash, denoting a process)

management → menedjment or boshqaruv tizimi (literal translation "management system")

Variation of spelling and pronunciation:

Some terms have competing forms:

training → trening or trenajyor mashg'ulotlari

distance learning → distansion ta'lim (borrowing) vs. masofaviy ta'lim (calque)

accreditation → akkreditatsiya or tasdiqlash jarayoni

Calculation

Calculation involves the literal translation of Russian terms into Uzbek by translating individual components. In calquing, elements of Russian terms are translated literally.

Examples:



distance learning → masofaviy ta'lim (masofa - "distance", ta'lim - "learning"),
critical thinking → tanqidiy tafakkur (tanqidiy - "critical", tafakkur - "thinking"),
self-education → o'z-o'zini o'qitish (o'z-o'zini - "self", o'qitish - "learning"),
professional competence → kasbiy kompetentlik (kasbiy - "professional", kompetentlik - "competence"),
scientific research → ilmiy tadqiqot (ilmiy - "scientific", tadqiqot - "research").
This way allows the Uzbek language to preserve its national specificity, but in some cases the calcified terms may sound cumbersome or less natural[6].

Creating new terms

In a number of cases, Russian-language pedagogical terms are not borrowed directly, but are replaced by original Uzbek words that reflect the essence of the concept.

Examples:

educational environment → ta'lim muhiti (muhit - "environment"),
academic honesty → ilmiy vijdonlilik (ilmiy - "academic", vijdonlilik - "honesty"),
knowledge assessment → baholash tizimi (baholash - "assessment", tizim - "system"),
learning through research → tadqiqot asosida o'qitish (tadqiqot - "research", asosida - "based on", o'qitish - "learning"),
digital literacy → raqamli savodxonlik (raqamli - "digital", savodxonlik - "literacy").

This process is particularly important for the preservation of Uzbek lexical identity and contributes to the development of pedagogy in the national language.

Discussion

The study's findings reveal that pedagogical terminology in the Uzbek language is largely shaped by direct borrowing, calquing, and original term creation, with 45% of terms being transliterations from Russian, 30% being calques, and 25% being newly developed Uzbek terms. This distribution suggests that while Russian continues to exert substantial influence, efforts toward linguistic independence and the development of native terminology are becoming more prominent. These results align with previous studies, which have highlighted the historical impact of Russian on Uzbek academic vocabulary. However, unlike earlier research that primarily focused on qualitative descriptions, this study offers a quantitative corpus-based analysis, providing more precise insights into terminological adaptation trends[7].

The significance of these findings extends beyond lexicography and into broader linguistic and educational frameworks. The predominance of borrowed terminology underscores the historical reliance on Russian as a primary source of academic language, a trend common in post-Soviet linguistic environments. However, the observed increase in native term formation suggests a growing shift towards linguistic autonomy, which aligns with Uzbekistan's language policy aimed at strengthening the use of Uzbek in academia. This transition is crucial for educational standardization and the development of a self-sustaining academic lexicon. In contrast, similar studies on English influence in other post-Soviet states indicate a more pronounced integration of English terms, a trend that is only beginning to emerge in Uzbekistan. Future research should explore whether English is starting to replace Russian as the dominant source of borrowed terminology in Uzbek academia[8].

The study's theoretical contributions lie in its application of corpus linguistics to terminological analysis, offering an empirical approach to understanding lexical integration. By utilizing computational tools such as Sketch Engine, AntConc, and Python NLP libraries, the study establishes a replicable methodology for analyzing terminology formation. From a practical perspective, the findings have direct implications for language planning and policy development, particularly in the standardization of pedagogical terminology. If Uzbek is to fully establish itself as the primary language of scientific discourse, structured efforts are needed to promote the creation and institutionalization of native terms. This includes revising



dictionaries, updating educational materials, and encouraging scholars to use standardized Uzbek terminology in their academic publications[9].

Despite its contributions, the study has several limitations. First, while the corpus-based approach provides quantitative insights, it does not account for qualitative aspects such as the perception and acceptance of newly created Uzbek terms among educators and researchers. Additionally, the study primarily focuses on Russian influence, without examining the emerging role of English in Uzbek pedagogical vocabulary. Another limitation is that the analysis is restricted to written academic sources, while spoken pedagogical discourse, where borrowing patterns might differ, remains unexplored. Future research should address these gaps by conducting surveys and interviews with educators to assess their preferences for using borrowed versus native terms. Furthermore, expanding the study to include multiple academic disciplines would offer a more comprehensive understanding of terminology adaptation trends in Uzbek academia[10].

In conclusion, the study highlights the evolving nature of pedagogical terminology in the Uzbek language, demonstrating a gradual shift from Russian dependence to native term development. While Russian remains the dominant source of terminology, there is a clear trend towards linguistic self-sufficiency. These findings underscore the need for continued efforts in standardization and policy support to strengthen the use of Uzbek in academia. Future studies should explore the growing role of English in academic terminology and investigate strategies to accelerate the development and adoption of native Uzbek terms across various scientific fields.

4. Conclusion

The comparative analysis has shown that pedagogical terminology in the Uzbek language is formed through a combination of borrowings, calcification and creation of new words. The main influence on the development of the terminological base is exerted by Russian-language materials, but there is a tendency towards active development of the national terminological system.

Promising directions for further research are:

- analysis of the influence of English on Uzbek pedagogical vocabulary;
- study of the processes of standardization of Uzbek pedagogical terms;
- study of terminological diversity in various academic disciplines.

The use of corpus analysis in combination with program tools allowed to identify the most frequent pedagogical terms, their adaptation in Uzbek language and regularities of their formation.

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