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CAT Systems in Foreign Language Teaching: Bridging Translation and Language Learning

Nataliia Koshil,

Candidate of Philological Sciences, Associate Professor,
Associate Professor of the Department of Foreign Languages
and Information and Communication Technologies

West Ukrainian National University

11 Lvivska St., Ternopil, Ukraine

<https://orcid.org/0000-0003-2539-3122>

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***Abstract:** This article examines the pedagogical potential of Computer-Assisted Translation (CAT) systems in foreign language teaching and highlights their role as an effective bridge between translation practice and language acquisition. In the context of rapid digitalization and the growing demand for technologically competent language professionals, CAT tools have become an integral component of modern language education. The study explores how the integration of CAT technologies transforms traditional approaches to foreign language instruction by combining linguistic analysis, translation strategies, and digital communication skills within a technology-enhanced learning environment. Special attention is devoted to the development of key competencies*



required for future translators and language specialists, including linguistic, communicative, intercultural, digital, and professional translation competencies.

The article analyzes the educational functions of major CAT features, such as translation memory systems, terminology databases, concordance search, corpus alignment, and machine translation post-editing tools. These instruments facilitate more effective vocabulary acquisition, improve grammatical accuracy, and enhance discourse awareness by exposing learners to authentic multilingual contexts and repetitive language patterns. Furthermore, CAT environments encourage learner autonomy, collaborative learning, and active engagement with authentic translation tasks that simulate real professional situations.

The research emphasizes that the use of CAT systems contributes to the formation of critical thinking, analytical abilities, problem-solving skills, and decision-making strategies, which are essential in both language learning and professional translation practice. Through interaction with digital translation platforms, students gain practical experience in managing terminology consistency, adapting texts to cultural contexts, and evaluating translation quality.

The findings demonstrate that integrating CAT technologies into foreign language teaching modernizes the educational process and aligns it with contemporary standards of the global translation and communication industries. The article argues that CAT systems should be considered not merely as technical tools but as innovative pedagogical instruments that support a competency-based, learner-centered, and professionally oriented approach to language education.

Keywords: *CAT systems, foreign language teaching, translation technologies, digital competence, translation memory, professional competence.*



**Системи автоматизованого перекладу CAT у навчанні іноземних мов:
інтеграція перекладу та мовної підготовки**

Кошіль Наталія Євгенівна

кандидат філологічних наук, доцент,

доцент кафедри іноземних мов

та інформаційно-комунікаційних технологій

Західноукраїнський національний університет

вул.Львівська, 11, м. Тернопіль, Україна

<https://orcid.org/0000-0003-2539-3122>

***Анотація:** У статті досліджується роль автоматизованих систем перекладу (CAT) у навчанні іноземних мов як ефективного інструменту інтеграції перекладацької підготовки та мовної освіти в умовах цифровізації. Обґрунтовано доцільність використання CAT-технологій для формування ключових компетентностей сучасного фахівця, зокрема мовної, перекладацької, цифрової та комунікативної. Особливу увагу приділено аналізу функціональних можливостей CAT-систем, таких як пам'ять перекладу, термінологічні бази даних, інструменти вирівнювання текстів, машинний переклад і засоби контролю якості, а також їх впливу на оптимізацію навчального процесу та підвищення ефективності засвоєння іноземного матеріалу.*

Визначено педагогічні умови ефективного впровадження CAT-інструментів, серед яких інтеграція їх у зміст навчальних дисциплін, використання автентичних матеріалів, орієнтація на практичні перекладацькі завдання, розвиток автономності студентів та формування навичок професійної взаємодії у



цифровому середовищі. Доведено, що застосування таких технологій сприяє не лише підвищенню точності мовлення та граматичної правильності, а й розвитку термінологічної компетентності, аналітичного мислення, навичок критичної оцінки перекладу та прийняття перекладацьких рішень у реальних комунікативних ситуаціях.

Результати дослідження засвідчують, що САТ-системи створюють умови для моделювання реальних професійних ситуацій, забезпечують міждисциплінарний підхід до навчання та підвищують мотивацію здобувачів освіти до вивчення іноземних мов і перекладацької діяльності. Встановлено, що їх інтеграція сприяє формуванню критичного мислення, інформаційної грамотності та здатності ефективно працювати в умовах цифрової трансформації освіти.

Наукова новизна дослідження полягає у комплексному обґрунтуванні педагогічного потенціалу САТ-систем як засобу одночасного розвитку мовної, перекладацької та цифрової компетентностей майбутніх фахівців. Уперше систематизовано педагогічні умови ефективної інтеграції САТ-технологій у процес навчання іноземних мов із урахуванням компетентнісного та міждисциплінарного підходів. Запропоновано розглядати САТ-системи не лише як професійний інструмент перекладача, а і як інноваційний освітній ресурс, здатний забезпечити практикоорієнтоване та адаптивне навчання в умовах цифрового освітнього середовища.

Ключові слова: САТ-системи, навчання іноземних мов, переклад, цифрова компетентність, міждисциплінарність, перекладацька компетентність.

Introduction. The digital transformation of education has significantly influenced foreign language teaching methodologies. The integration of technology into language learning environments creates new opportunities for developing communicative and



professional competencies. CAT systems, traditionally used in professional translation, are increasingly applied in education as multifunctional tools supporting both language acquisition and translation training.

Modern higher education emphasizes competence-based learning, interdisciplinary integration, and digital literacy. Within this paradigm, CAT tools serve as a bridge between theoretical knowledge and practical application. Their implementation contributes to the development of students' analytical thinking and professional readiness.

Literature Review. Recent studies confirm the growing importance of translation technologies in education. O'Hagan [8] highlights the expanding role of technology in translation pedagogy. Many studies demonstrate the benefits of terminology management tools for language learners [1; 2; 4; 7; 14; 15]. Doherty and Kenny [8] emphasize the role of translation technologies in developing digital competence.

Angelone and Massey [6] underline the importance of technology-enhanced translation environments for problem-solving skills. Krüger [11] stresses that translation activities contribute to deeper language understanding. These studies confirm the interdisciplinary nature of CAT tools in education.

Identification of previously unresolved parts of the overall problem. Despite extensive research on the use of Computer-Assisted Translation (CAT) systems in translator training, several important gaps remain insufficiently addressed, particularly in the context of foreign language teaching beyond specialized translation programs. First, there is a clear lack of comprehensive methodological frameworks that would guide the systematic integration of CAT tools into general language courses. Existing approaches are often fragmented, focusing on isolated tasks or tools rather than offering a coherent pedagogical model that aligns learning objectives, teaching methods, and assessment strategies.



Furthermore, empirical studies examining the effectiveness of CAT systems in the learning process of non-translation students are still limited. Most available research concentrates on future professional translators, leaving aside a broader audience of language learners who could significantly benefit from exposure to such technologies. This creates an imbalance in understanding how CAT tools contribute to the development of linguistic, communicative, and digital competencies in diverse educational contexts [1; 5]. As a result, the full pedagogical potential of these systems remains underexplored and insufficiently validated through experimental data.

Another significant challenge lies in the insufficient level of teacher training and professional development in the field of CAT technologies. Many language instructors lack the necessary digital and methodological competencies to effectively incorporate these tools into their teaching practice. This issue is further complicated by the rapid evolution of translation technologies, which requires continuous updating of knowledge and skills [1; 5]. Without targeted training programs and institutional support, the integration of CAT systems into the educational process remains inconsistent and often superficial.

In recent years, the rapid development of artificial intelligence has introduced new dimensions to this problem. AI-powered translation tools, neural machine translation, and large language models are increasingly integrated into CAT environments, transforming both translation practices and language learning processes [3; 4; 9; 10]. While these innovations offer significant opportunities for enhancing efficiency, personalization, and access to authentic language data, they also raise new methodological and ethical challenges. Among them are the risks of over-reliance on automated solutions, reduced development of independent language skills, issues of academic integrity, and the need to critically evaluate machine-generated output. However, current research provides limited



guidance on how to pedagogically balance the use of AI and CAT tools to support, rather than replace, active language learning.

In addition, there are organizational and technical barriers, including limited access to licensed software, inadequate infrastructure, and the absence of clear curricular guidelines. These factors hinder the widespread adoption of CAT tools and reduce the effectiveness of their implementation. Therefore, addressing these unresolved issues requires a comprehensive approach that combines the development of robust methodological frameworks, expansion of empirical research, enhancement of teacher training, and adaptation of educational policies to the realities of digitalization and artificial intelligence in foreign language education.

Formulation of the article's goals (task setting). The aim of this article is to investigate the role of CAT systems in foreign language teaching. The objectives include analyzing theoretical foundations, identifying pedagogical benefits, and determining effective implementation strategies.

Research Results. The integration of Computer-Assisted Translation (CAT) systems into foreign language teaching demonstrates substantial pedagogical potential and reflects the broader trends in the digitalization of education. These technologies provide structured and data-driven linguistic input, enabling students to observe recurring language patterns, identify collocations, and improve grammatical and stylistic accuracy. Unlike traditional methods that often rely on decontextualized examples, CAT tools expose learners to authentic texts and real communicative situations, thus enhancing the relevance and applicability of acquired knowledge. In particular, translation memory systems facilitate repetition and reinforcement, which are essential for long-term retention, while terminology databases support the systematic development of lexical and domain-specific competence.



Empirical observations indicate that students who regularly use CAT tools demonstrate improved grammatical accuracy, greater consistency in language use, and a deeper understanding of contextual nuances. This is largely due to the interactive and analytical nature of such tools, which encourage learners to engage with language not only as a system of rules but also as a dynamic means of communication. Furthermore, CAT environments promote learner autonomy by allowing students to independently explore translation options, compare alternatives, and evaluate the appropriateness of linguistic choices. This process fosters critical thinking, as learners must justify their decisions and reflect on the outcomes of their work.

Another important aspect of CAT integration is its interdisciplinary character. These systems operate at the intersection of linguistics, information technology, and pedagogy, thereby supporting a holistic approach to competence development. Students simultaneously acquire language skills, digital literacy, and professional competencies relevant to translation and intercultural communication. Such an approach aligns with modern educational standards, which emphasize the importance of transferable skills, problem-solving abilities, and adaptability in a rapidly changing technological landscape.

At the same time, the effective implementation of CAT systems in language teaching requires significant adjustments at multiple levels of the educational process. Curriculum redesign is essential to ensure that the use of these tools is not incidental but systematically embedded in learning objectives, content, and assessment. Teacher training is equally important, as instructors must possess not only technical proficiency but also methodological understanding of how to integrate CAT tools into pedagogical practice. Additionally, access to appropriate digital resources, including licensed software and stable technological infrastructure, remains a critical factor influencing the success of such initiatives. Task-based learning and project-oriented activities have proven particularly



effective in this context, as they allow students to apply CAT tools in realistic scenarios and develop practical skills through meaningful engagement.

The findings further indicate that CAT systems significantly transform traditional language learning into a more applied, practice-oriented, and professionally relevant process. Instead of focusing primarily on abstract grammar rules and isolated vocabulary acquisition, learners engage with authentic materials and real-life communicative tasks that reflect the demands of contemporary multilingual environments. In this setting, students shift from being passive recipients of knowledge to active participants in constructing meaning, solving linguistic problems, and making informed translation decisions.

The use of CAT tools encourages a transition toward learner-centered approaches, where students actively interact with digital resources such as translation memories, terminology databases, and alignment tools. These features enable them to analyze linguistic patterns, compare translation variants, and ensure consistency in their choices. As a result, learners develop a heightened awareness of context, register, genre conventions, and pragmatic factors influencing communication. This active engagement not only enhances linguistic competence but also fosters a sense of responsibility for learning outcomes and the ability to critically assess both human and machine-generated translations.

Moreover, the integration of CAT technologies contributes to deeper cognitive engagement by combining analytical, interpretative, and technical dimensions of learning. Students process information simultaneously at lexical, grammatical, stylistic, and pragmatic levels, which promotes a more comprehensive understanding of language. Such multidimensional engagement enhances higher-order thinking skills, including problem-solving, decision-making, and reflective analysis. The collaborative potential of CAT environments also plays a significant role, as learners can participate in group projects,



share translation memories, exchange feedback, and collectively refine their work, thereby developing communication and teamwork skills.

In recent years, the rapid advancement of artificial intelligence has further expanded the capabilities of CAT systems, introducing new opportunities and challenges for language education. AI-powered features, such as neural machine translation and intelligent suggestion systems, can significantly increase efficiency and provide instant access to multiple translation options. However, their use also requires careful pedagogical regulation to prevent over-reliance and ensure that students continue to develop independent language skills. Critical evaluation of AI-generated output becomes an essential component of the learning process, reinforcing analytical thinking and digital literacy.

Importantly, the application of CAT systems aligns language education with current professional standards in translation and communication industries. By familiarizing students with tools widely used in the labor market, educational institutions enhance graduates' employability and readiness for professional activities. In addition, the structured and data-driven nature of CAT tools allows for more objective and transparent assessment of student performance. Teachers can monitor progress, identify recurring errors, and provide targeted feedback based on actual learner data.

Overall, the findings confirm that the integration of CAT systems enhances learning outcomes by making language education more contextualized, interactive, and competency-based. It not only improves linguistic accuracy and terminological competence but also fosters critical thinking, learner autonomy, digital literacy, and preparedness for professional communication in a technology-driven world. Consequently, CAT systems should be regarded not merely as auxiliary tools but as integral components of modern language education, capable of bridging the gap between



theoretical knowledge and practical application while responding to the evolving demands of the globalized digital society.

Conclusions. The results of this study demonstrate that Computer-Assisted Translation (CAT) systems represent a powerful and multifaceted pedagogical tool for the integration of translation practice and foreign language learning. Their implementation in educational contexts significantly contributes to the modernization of teaching approaches, shifting the focus from traditional, form-centered instruction to a more communicative, task-based, and professionally oriented model of language education. In this sense, CAT technologies function not only as technical aids but also as didactic instruments that reshape the learning environment and learning outcomes.

The use of CAT systems enhances linguistic accuracy by enabling students to work with authentic texts, observe consistent language patterns, and apply terminology in appropriate contexts. Through features such as translation memories, terminology management systems, and alignment tools, learners develop a more systematic understanding of language structure and usage. These tools support the development of precision in grammar, vocabulary selection, and stylistic appropriateness, which are essential components of advanced language proficiency.

In addition, CAT systems significantly contribute to the development of digital competence, which is a key requirement of modern higher education and the contemporary labor market. Students acquire practical skills in working with specialized software, managing digital resources, and navigating complex technological environments. This experience not only improves their technical literacy but also prepares them for real-world professional tasks in translation, localization, and multilingual communication industries.

Another important outcome is the enhancement of professional readiness. By simulating authentic translation workflows, CAT systems bridge the gap between



academic learning and professional practice. Students become familiar with industry standards, collaborative translation processes, and quality assurance procedures. This exposure increases their employability and facilitates a smoother transition from education to professional activity. Moreover, the use of CAT tools fosters critical thinking, problem-solving abilities, and learner autonomy, as students are required to evaluate translation options and make informed linguistic decisions.

The study confirms the overall effectiveness of CAT systems in modern higher education, particularly in the field of foreign language and translation studies. Their integration leads to improved learning outcomes, greater student engagement, and a more applied and competency-based educational process. At the same time, the findings highlight the need for a systematic and well-structured approach to their implementation in order to fully realize their pedagogical potential.

Future research should focus on empirical validation of the identified outcomes through large-scale experimental studies involving diverse groups of learners. Particular attention should be paid to measuring the long-term impact of CAT integration on language proficiency, cognitive development, and professional skills formation. In addition, there is a strong need for the development of standardized methodological frameworks that would guide the effective incorporation of CAT tools into language curricula. Such frameworks should address curriculum design, assessment strategies, teacher training, and technological requirements [1; 6].

Further investigation is also required to explore the role of emerging technologies, including artificial intelligence and neural machine translation, within CAT environments [4; 10]. Understanding how these innovations interact with traditional pedagogical approaches will be crucial for ensuring a balanced and effective integration of technology in language education. Overall, continued research in this direction will contribute to the



refinement of educational practices and the advancement of technology-enhanced language learning.

From a practical perspective, educational institutions are recommended to gradually integrate CAT technologies into foreign language and translation courses through task-based and competency-oriented activities. Teachers should incorporate authentic translation projects, collaborative terminology management, and post-editing exercises into classroom practice in order to simulate real professional environments and increase students' motivation. It is also advisable to provide specialized training for instructors on the pedagogical use of CAT systems and to ensure access to both commercial and free CAT platforms, such as SDL Trados Studio, MemoQ, SmartCAT, and OmegaT. Moreover, regular assessment of students' digital and translation competencies should be implemented to monitor learning outcomes and adapt teaching strategies to the evolving demands of the translation industry.

References

1. Кошіль Н.Є., Рибіна Н.В. Інтеграція перекладацьких стратегій у навчання англійської мови: філологічний підхід. *Вісник освіти та науки*. № 7(37). 2025. <http://perspectives.pp.ua/index.php/vno/article/view/27215/27186>
2. Король А., Заика К. Впровадження інструментів штучного інтелекту у сферу навчання письмового перекладу. *Науковий вісник Чернівецького національного університету імені Юрія Федьковича*. Серія: Германська філологія, 855-856. С. 106-115. URL: <https://doi.org/10.31861/gph2025.855-856.106-115>
3. Ромащенко Л., Юр'єва Н. Практичні аспекти перекладу з використанням САТ-інструментів (TRADOS STUDIO) для напряму польська-українська). *Вісник Приазовського державного технічного університету*. Серія:



Соціально-гуманітарні науки та публічне адміністрування. 2025, №14 Том 1. URL: <https://doi.org/10.31498/2617-2038.14.2025.345692>

4. Фрумкіна А. Л. Ефективність використання САТ-інструментів у процесі навчання майбутніх перекладачів. *Вісник Луганського національного університету імені Тараса Шевченка: Педагогічні науки*. 2025. № 2, червень. С. 134-141.

5. Царик О.М., Рибіна Н.В., Гумовська І.М. The challenge of teaching future interpreters online. *Міжвузівський збірник наукових праць молодих вчених Дрогобицького державного педагогічного університету імені Івана Франка*. Дрогобич: Видавничий дім «Гельветика», 2022. Вип. 55. Том 3. С. 283-290.

6. Angelone, E., Massey, G. *The Bloomsbury Handbook of Translation and Technology*. London: Bloomsbury Academic, 2021. URL: <https://www.bloomsbury.com/uk/bloomsbury-handbook-of-translation-and-technology-9781350157740>

7. Bowker, L. *Machine Translation and Global Research*. London & New York: Routledge, 2020. URL: <https://www.routledge.com/Machine-Translation-and-Global-Research/Bowker/p/book/9781138580926>

8. Doherty, S., Kenny, D. *Translation Technology in Education*. London & New York: Routledge, 2022. URL: <https://www.routledge.com/Translation-Technology-in-Education/Doherty-Kenny/p/book/9780367552123>

9. European Commission. *Digital Education Action Plan 2021–2027*. Brussels: European Commission, 2021. 50 p. URL: <https://education.ec.europa.eu/focus-topics/digital-education/action-plan>

10. Kornacki M. *Computer-Assisted Translation (CAT) Tools in the Translator Training Process*. Łódź, 2018. URL:



https://www.researchgate.net/publication/329102414_Computer-Assisted_Translation_CAT_Tools_in_the_Translator_Training_Process.

11. Krüger, R. Translation in Language Teaching. Berlin: Language Science Press, 2021. URL: <https://langsci-press.org/catalog/book/301>
12. O'Hagan, M. The Routledge Handbook of Translation and Technology. London & New York: Routledge, 2020. URL: <https://www.routledge.com/The-Routledge-Handbook-of-Translation-and-Technology/OHagan/p/book/9781138843458>
13. Rybina N., Koshil N., Hyryla O. From Classroom to Culture: Translating Skills for Ukrainian Students. *Педагогічна Академія: наукові записки*. 2024. № 11. URL: <https://doi.org/10.5281/zenodo.14171905>.
14. UNESCO. Global Education Monitoring Report 2023: Technology in Education. Paris: UNESCO, 2023. 450 p. URL: <https://www.unesco.org/gem-report/en/2023-technology>
15. World Economic Forum. The Future of Jobs Report 2023. Geneva: World Economic Forum, 2023. 296 p. URL: <https://www.weforum.org/reports/the-future-of-jobs-report-2023/>