Scientific Center of Innovative Research OÜ

PEDAGOGY AND EDUCATION MANAGEMENT REVIEW (PEMR)

Issue 3 (21)

2025

e-ISSN 2733-2039 print-ISSN 2733-2144

International databases and directories indexing publications:

- CrossRef (DOI: 10.36690);
- ISSN International Centre;
- ORCID;
- Google Scholar;
- National Library of Estonia;
- PKP-Index;
- OpenAIRE;
- Eurasian Scientific Journal Index;
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- Directory of Research Journals Indexing (India);

Pedagogy and Education Management Review. DOI: 10.36690/2733-2039-2025-3

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CHAPTER 3
THEORY AND METHODS OF VOCATIONAL EDUCATION

INFORMATION AND COMMUNICATION TECHNOLOGIES AS A FACTOR OF INCREASING THE EFFICIENCY OF FORMING PROFESSIONAL COMPETENCES OF FUTURE PHILOLOGISTS

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Citation:
Novakivska, L., Honcharuk, V., Tsyhanok, O., & Parkheta, L. (2025). INFORMATION AND COMMUNICATION TECHNOLOGIES AS A FACTOR OF INCREASING THE EFFICIENCY OF FORMING PROFESSIONAL COMPETENCES OF FUTURE PHILOLOGISTS. *Pedagogy and Education Management Review*, (3(21), 71–82. https://doi.org/10.36690/2733-2039-2025-3-71-82

Received: August 27, 2025
Approved: September 29, 2025
Published: September 30, 2025

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Abstract. *The rapid development of information and communication technologies (ICT) has fundamentally transformed approaches to higher education, particularly in the field of philology. Modern philologists are expected not only to master linguistic and literary knowledge but also to demonstrate the ability to navigate digital environments, employ online resources for research, collaborate virtually, and integrate multimedia tools into language learning and teaching. This paper explores ICT as a catalyst for enhancing the efficiency of professional competence formation among future philologists, emphasizing its methodological, cognitive, and practical dimensions. The study highlights that ICT tools – such as digital linguistic corpora, electronic dictionaries, online translation platforms, virtual classrooms, and interactive learning management systems – expand students' access to authentic language materials and create conditions for autonomous learning. They also foster critical thinking, problem-solving, and cross-cultural communication skills by exposing learners to diverse linguistic and cultural contexts. Moreover, ICT facilitates immediate feedback and personalized learning trajectories, which are essential for developing communicative, research, and pedagogical competences required in philological professions. The implementation of ICT-based pedagogical strategies supports collaborative project work, digital storytelling, corpus-based analysis, and blended learning models, thereby bridging theoretical knowledge and practical application. The findings suggest that systematic integration of ICT not only improves the quality of professional training but also increases student motivation and adaptability to rapidly changing educational and professional landscapes. Consequently, ICT should be viewed as a key factor in modernizing philological education and aligning it with the global digital knowledge economy.*

Keywords: *information and communication technologies; professional competences; future philologists; digital learning; ICT integration; educational efficiency.*

JEL Classification: I23, J24, O33, D83
Formulas: 0; fig. 0; tabl. 1; bibl.: 11

e-ISSN 2733-2039 print-ISSN 2733-2144

Introduction. The rapid development of information and communication technologies (ICT) over the past three decades has fundamentally transformed the landscape of education, creating unprecedented opportunities for enhancing the quality, accessibility, and efficiency of professional training across all disciplines. In higher education, the integration of ICT has become not merely an additional resource but a strategic necessity that shapes the very structure and methods of teaching and learning. Among the disciplines that experience significant influence from technological progress is philology – the field that traditionally relies on textual analysis, cultural interpretation, and linguistic competence. The preparation of future philologists now increasingly depends on their ability to engage with, adapt to, and effectively apply ICT tools that facilitate language acquisition, cross-cultural communication, digital research, and innovative forms of academic collaboration. In the modern knowledge-based society, language and literature specialists are expected to master a broad spectrum of professional competences that go far beyond classical linguistic knowledge. The professional competence of a philologist today encompasses not only advanced language skills, literary analysis, and cultural studies but also digital literacy, the ability to work with electronic corpora, computational linguistics resources, online databases, and platforms for intercultural communication. Moreover, philologists must be proficient in presenting their research through digital media, participating in virtual academic discussions, collaborating on multilingual projects, and contributing to the development of digital educational resources. Therefore, the formation of professional competences of future philologists cannot be fully achieved without an intentional, systematic, and pedagogically sound integration of ICT into all stages of their university education.

The urgency of this integration is heightened by global trends that redefine communication practices and reshape the labor market. For philology students, who often engage in translation, editing, content management, teaching foreign languages, or conducting linguistic research, digital competence is not an optional skill but an essential component of professional readiness. Employers in publishing, media, education, and cultural institutions increasingly demand that graduates possess strong digital communication skills, familiarity with online publishing platforms, knowledge of computer-assisted translation (CAT) tools, and the capacity to work with large linguistic datasets.

At the same time, the field of ICT itself is constantly evolving. The emergence of artificial intelligence-driven language technologies, such as neural machine translation systems, automated text analysis tools, speech recognition software, and adaptive learning platforms, provides philology students with unprecedented resources for both research and practice. However, the effective use of such technologies requires not only technical proficiency but also critical thinking, ethical awareness, and the ability to evaluate the credibility of digital resources. Thus, educational institutions face the challenge of ensuring that the integration of ICT into philological education contributes to the holistic development of future specialists rather than leading to superficial or fragmentary skill acquisition.

e-ISSN 2733-2039 print-ISSN 2733-2144

The relevance of studying ICT as a factor of increasing the efficiency of forming professional competences of future philologists is further underscored by the specific challenges faced by contemporary higher education in Ukraine and worldwide. Globalization, international academic mobility, and the proliferation of blended and online learning models require universities to create flexible learning environments that can accommodate diverse student needs and learning styles. For philology departments, this entails designing ICT-enhanced curricula that balance traditional humanistic approaches with innovative technological methodologies, ensuring that students can acquire not only theoretical knowledge but also practical digital skills applicable to real-world professional contexts. From a pedagogical perspective, the integration of ICT into philological education provides several advantages. Firstly, it enables personalized learning through adaptive educational platforms that can adjust the content and pace of instruction to the learner's proficiency level. Secondly, it enhances student motivation by offering interactive multimedia resources that make the study of languages and literature more engaging and accessible. Thirdly, ICT tools facilitate collaborative learning by connecting students across different regions and even countries, thus fostering intercultural dialogue and preparing future philologists for participation in global academic and professional communities. Fourthly, digital technologies expand opportunities for formative and summative assessment through online quizzes, e-portfolios, digital peer review, and automated feedback mechanisms, allowing educators to monitor student progress more effectively and tailor instruction accordingly.

Nevertheless, the implementation of ICT in philological education is not without obstacles. Limited access to high-quality digital infrastructure, insufficient ICT competence among teaching staff, lack of pedagogically validated digital content in philological disciplines, and resistance to changing traditional teaching practices are among the major barriers that can hinder the effectiveness of technology-enhanced learning. Furthermore, the overreliance on digital tools without proper methodological guidance can lead to the fragmentation of knowledge, reduction in critical reading habits, and superficial engagement with complex linguistic and literary concepts. Hence, the success of ICT integration depends not only on the availability of hardware and software but also on the readiness of educators and students to adopt innovative pedagogies, the support provided by institutional policies, and the continuous professional development of teaching staff.

Theoretical and empirical research in the field of educational technologies consistently highlights that ICT can significantly increase the efficiency of professional competence formation when it is embedded into the learning process in a systematic, purposeful, and pedagogically grounded manner. For future philologists, such competence includes several interconnected components: cognitive (linguistic and literary knowledge), operational (practical application of language and research tools), communicative (oral and written communication in professional contexts), intercultural (ability to interpret texts and cultural phenomena), and technological (proficiency in digital tools relevant to philology). By aligning these components with modern ICT-based instructional strategies, higher education institutions can create

e-ISSN 2733-2039 print-ISSN 2733-2144

comprehensive educational environments that foster both academic excellence and employability of graduates.

Given these considerations, the present research focuses on analyzing the role of information and communication technologies as a factor that enhances the efficiency of forming professional competences of future philologists. The study explores the pedagogical conditions and methodological approaches that ensure the productive integration of ICT into philological training. It also examines the challenges and prospects of implementing ICT in Ukrainian universities in the context of global educational transformations. The findings of this research are expected to provide practical recommendations for educators, curriculum developers, and policymakers seeking to modernize philological education in alignment with the demands of the digital era.

In conclusion, the introduction of ICT into philological education represents not merely a technological upgrade but a paradigm shift that reshapes teaching methods, learning strategies, and professional expectations. It holds the potential to make the process of competence formation more efficient, flexible, and responsive to the needs of both students and the labor market. However, realizing this potential requires a well-designed pedagogical framework, adequate institutional support, and a commitment to continuous innovation in teaching practices. The present study seeks to contribute to this endeavor by investigating how ICT can serve as a catalyst for enhancing the professional preparation of future philologists and by outlining the conditions under which such integration yields the most significant educational outcomes.

Literature Review. The rapid development of information and communication technologies (ICT) has transformed the educational landscape, reshaping how knowledge is accessed, created, and disseminated. In the field of philology, where the mastery of languages, textual analysis, cultural studies, and communication skills are central, ICT has emerged as a crucial factor that supports the acquisition of professional competences. A growing body of research in educational sciences, applied linguistics, and teacher training explores how ICT enhances students' cognitive engagement, linguistic proficiency, digital literacy, and readiness for future professional activities. This literature review synthesizes key findings from international and national scholarship over the past two decades, focusing on the role of ICT in improving the efficiency of competence formation among future philologists.

The integration of ICT in philology is grounded in constructivist and socio-cultural theories of learning. Scholars such as Vygotsky (1978) emphasize the mediating role of cultural tools – of which digital technologies are now paramount – in shaping learners' cognitive development. In higher education, the concept of competence-based learning (Boyatzis, 2008; Mulder, 2017) links knowledge acquisition with skills, attitudes, and professional readiness. Researchers (Krumsvik, 2011; Ferrari et al., 2013) have noted that digital competence itself becomes a meta-competence required for 21st-century specialists, including philologists.

In the context of philological education, ICT refers not only to hardware and software but also to pedagogical frameworks such as e-learning platforms (Moodle, Canvas), digital corpora of texts, multimedia language laboratories, interactive

e-ISSN 2733-2039 print-ISSN 2733-2144

dictionaries, and online collaborative tools. Several studies (Chapelle, 2010; Warschauer & Kern, 2000) suggest that ICT-mediated language learning enhances authenticity, learner autonomy, and intercultural competence – key components of philologists' professional profile.

A substantial strand of literature highlights ICT's role in improving linguistic skills. Computer-Assisted Language Learning (CALL) has been shown to facilitate vocabulary acquisition, grammar practice, and pronunciation through adaptive feedback (Levy & Stockwell, 2013). For philology students, exposure to authentic texts in digital corpora (e.g., British National Corpus, Corpus of Contemporary American English) enables data-driven learning and deeper linguistic analysis (Boulton & Cobb, 2017).

Another dimension of philologists' professional competence involves advanced research skills: textual criticism, translation, discourse analysis, and stylistics. ICT provides tools such as text-mining software, computer-assisted translation systems (CAT), and digital annotation platforms that streamline these processes (Kenny, 2017; Bowker, 2015). The availability of online libraries, academic databases, and open-access journals has democratized scholarly research, as highlighted by Borgman (2015). Digital humanities approaches have expanded philological inquiry by integrating computational methods into corpus linguistics, historical lexicography, and literary analysis. Scholars like Underwood (2019) emphasize that digital text analysis not only accelerates research but also opens new epistemological perspectives for the study of language and literature.

Studies on teacher education stress that future philologists–many of whom become language teachers, translators, or cultural mediators – require not only content knowledge but also digital pedagogical skills. Research by Mishra and Koehler (2006) on the Technological Pedagogical Content Knowledge (TPACK) framework underscores the need for the integrated development of technological, pedagogical, and subject-specific competences. Blended learning environments, flipped classrooms, and Massive Open Online Courses (MOOCs) have been recognized for improving learner engagement and autonomy in philology programs (Hrastinski, 2019; Zawacki-Richter et al., 2020). Furthermore, learning analytics tools allow instructors to monitor progress and personalize feedback, which has been shown to enhance competence acquisition efficiency (Siemens & Long, 2011). Philology students may also face cognitive overload due to the abundance of digital resources, requiring educators to develop information literacy and critical thinking skills as part of the curriculum (Head & Eisenberg, 2010). Moreover, ethical considerations – such as intellectual property, academic honesty, and data privacyмare increasingly significant in digitally mediated philological practice. Recent Ukrainian and Eastern European scholarship aligns with global trends, emphasizing ICT's role in enhancing philology students' foreign language proficiency, intercultural competence, and research literacy (Bida et al., 2021; Honcharuk et al., 2023). Studies conducted in Ukrainian universities report that digital learning environments and virtual academic mobility programs contribute to higher motivation and professional readiness among philology majors. Nevertheless,

e-ISSN 2733-2039 print-ISSN 2733-2144

researchers note the necessity of state-level policies to support equitable access to ICT resources and continuous professional development for instructors.

At the same time, the reviewed scholarship highlights the importance of aligning ICT integration with pedagogical goals, addressing infrastructural and ethical challenges, and preparing both educators and students to leverage technologies effectively.

The literature reveals that ICT is not merely an auxiliary tool but an integral component of modern philological education. Its role extends beyond technical facilitation to reshaping the ways in which professional competences are conceptualized and developed. Future research is recommended to investigate long-term learning outcomes of ICT-supported training, assess the impact of artificial intelligence in language learning and translation studies, and explore culturally responsive digital pedagogies for philologists. Such investigations will provide empirical evidence to further optimize ICT's contribution to the professional growth of philology students.

Aims. The purpose of the study is to investigate the role of information and communication technologies in enhancing the efficiency of developing professional competences of future philologists, focusing on identifying effective ICT tools, methods, and strategies that contribute to improving the quality of their professional training and readiness for modern educational and linguistic challenges.

Methodology. The research methodology for the study "Information and Communication Technologies as a Factor of Increasing the Efficiency of Forming Professional Competences of Future Philologists" is based on a complex approach that combines theoretical analysis, empirical investigation, and experimental verification. The methodological framework was determined by the aim of the study – to explore the role of information and communication technologies (ICT) in enhancing the efficiency of developing professional competences among philology students.

Firstly, a theoretical analysis of scientific literature, normative documents, and educational standards was conducted to define the conceptual foundations of professional competence of future philologists and to clarify the pedagogical potential of ICT in higher education. This stage allowed the identification of key components of professional competence – linguistic, communicative, cultural, analytical, and digital – and their correlation with ICT-based learning tools.

Secondly, the study applied empirical methods, including surveys, questionnaires, interviews, and observation of students' learning activities. These methods helped to diagnose the initial level of students' professional competences, as well as their attitudes toward the use of ICT in the educational process. The data collected enabled the assessment of how effectively digital platforms, multimedia resources, and online collaboration tools contribute to competence development. The study also relied on quantitative and qualitative analysis to interpret the collected data. Statistical methods (mean values, percentage comparison, correlation analysis) were used to measure the effectiveness of the implemented ICT strategies, while qualitative analysis provided insights into students' motivation, engagement, and overall educational outcomes.

e-ISSN 2733-2039 print-ISSN 2733-2144

The combination of these methods ensured a comprehensive examination of the research problem and enabled reliable conclusions about the role of ICT in enhancing the efficiency of forming professional competences of future philologists.

Results. The results of the study indicate a significant influence of Information and Communication Technologies (ICT) on the development of professional competences among future philologists.

Table 1 summarizes survey results from 120 philology students, showing how specific ICT tools and practices contribute to language development, research skills, digital literacy, collaboration, time management, and learning motivation.

Table 1. The Impact of Information and Communication Technologies (ICT) on the Development of Professional Competences of Future Philologists

Aspect of ICT Influence	Description of Observed Effect	% of Respondents	Examples of ICT Tools/Applications
Enhancement of Language Competence	ICT tools positively affect language skills development and support continuous linguistic improvement.	82%	Online dictionaries, grammar checkers, language learning platforms
Improvement of Research Skills	ICT resources help students efficiently conduct academic research, access digital materials, and manage information.	76%	Online databases, digital libraries, research software
Development of Digital Literacy	Regular interaction with ICT significantly enhances digital literacy and the ability to use educational technologies effectively.	91%	Learning management systems (LMS), e-learning tools, educational software
Collaboration and Communication	Collaborative ICT tools improve teamwork, peer interaction, and communication competence.	68%	Discussion forums, virtual classrooms, cloud-based platforms
Time Management and Productivity	ICT applications improve students' ability to manage time and increase productivity through digital organization tools.	74%	Project management software, task organizers, scheduling tools
Motivation and Engagement	ICT integration enhances students' motivation and engagement in learning activities, making the process more interactive.	85%	Multimedia materials, gamified learning apps, interactive quizzes
Overall Assessment	Systematic use of ICT in philological education improves the efficiency of forming professional competences.	80% (general)	Integrated digital curriculum, blended learning environments

Source: compiled by the author based on the results of the survey

Based on the survey of 120 students from the Faculty of Philology, the following outcomes were observed:

1. *Enhancement of Language Competence:* 82% of respondents reported that the use of ICT tools, such as online dictionaries, grammar checkers, and language learning platforms, positively affected their language skills development.
2. *Improvement of Research Skills:* 76% of students indicated that ICT resources, including online academic databases, digital libraries, and research software, helped them efficiently conduct academic research and manage information.
3. *Development of Digital Literacy*: 91% of students acknowledged that regular interaction with ICT platforms significantly enhanced their digital literacy and ability to use modern educational technologies effectively.

e-ISSN 2733-2039 print-ISSN 2733-2144

4. *Collaboration and Communication*: 68% of respondents noted that collaborative ICT tools, such as discussion forums, virtual classrooms, and cloud-based platforms, improved their teamwork and communication skills.
5. *Time Management and Productivity*: 74% of students emphasized that ICT applications, including project management software and task organizers, contributed to more efficient time management and increased academic productivity.
6. *Motivation and Engagement*: 85% of respondents reported that the integration of ICT into learning activities increased their motivation and engagement in the educational process.

In general, 80% of students confirmed that the systematic use of ICT in philological education substantially improves the efficiency of forming professional competences, highlighting the importance of integrating digital technologies into the curriculum.

Discussion. The integration of information and communication technologies (ICT) into the educational process has become one of the most significant factors influencing the development of professional competences among students, including future philologists. In the modern educational landscape, where digital literacy is increasingly essential, the ability to effectively utilize ICT tools is not merely supplementary but fundamental to the professional growth of students in the humanities. Philology, being a discipline that combines the study of language, literature, and cultural context, particularly benefits from ICT integration due to the multifaceted nature of its subject matter and the demands of contemporary linguistic and literary research.

One of the primary advantages of ICT in the training of future philologists is the enhancement of access to authentic linguistic resources. Digital libraries, online corpora, and interactive databases allow students to study diverse texts from different periods, languages, and cultural contexts. These tools facilitate the development of analytical and interpretive skills, enabling learners to compare linguistic structures, understand semantic nuances, and trace the evolution of literary forms across historical periods. For instance, platforms such as Project Gutenberg, Google Books, and the Corpus of Contemporary American English provide an unprecedented breadth of material that traditional classroom resources cannot match. By leveraging such resources, students not only gain a more profound understanding of language and literature but also cultivate the ability to independently conduct scholarly research, an essential professional competence for any philologist.

Moreover, ICT contributes significantly to the improvement of communicative and collaborative skills. Digital technologies, including learning management systems (LMS), collaborative platforms like Google Workspace, and communication tools such as Zoom or Microsoft Teams, create an environment in which students can actively engage in discussions, peer reviews, and joint projects regardless of their physical location. This aspect of ICT usage fosters essential professional competences, such as teamwork, intercultural communication, and the capacity to articulate complex ideas clearly and convincingly. For philologists, who often work with texts that require

e-ISSN 2733-2039 print-ISSN 2733-2144

critical interpretation and contextual understanding, the ability to collaborate in virtual spaces and exchange insights with peers and experts worldwide represents a crucial dimension of professional development.

Another crucial factor is the role of ICT in enhancing the efficiency of personalized learning. Modern educational technologies offer adaptive learning platforms and software that can tailor educational content according to individual students' levels of knowledge, learning styles, and pace of comprehension. For example, language learning applications and digital grammar checkers provide immediate feedback, allowing students to recognize and correct mistakes independently. This form of active learning promotes deeper cognitive engagement and fosters self-directed learning, both of which are vital professional competences for philologists, who must often engage in meticulous textual analysis and independent research. By integrating such tools into the curriculum, educators can create a learning environment that simultaneously accommodates diverse learner needs and encourages the development of critical thinking and problem-solving skills.

Furthermore, ICT facilitates the integration of multimedia resources into philological education, enriching the traditional study of texts. Audio and video materials, interactive simulations, and virtual reality applications can provide students with a multisensory understanding of linguistic phenomena, literary works, and cultural contexts. For example, access to digital archives of spoken language, recordings of literary performances, or virtual museum tours allows students to experience language and literature in situ, thereby deepening their interpretive skills and cultural awareness. This multimodal approach not only enhances comprehension but also encourages creative engagement, enabling students to explore new methods of textual analysis, translation, and interpretation – competences that are highly valued in contemporary philological practice.

In addition, the use of ICT in philological education encourages the development of digital literacy as a core professional competence. In the 21st century, philologists are increasingly expected to work with digital texts, manage large datasets, employ software for textual analysis, and communicate findings in digital formats. Familiarity with content management systems, corpus analysis tools, and digital publishing platforms is essential for preparing students for the evolving demands of academia, research institutions, and publishing industries. Therefore, ICT not only enhances traditional skills such as reading, writing, and textual interpretation but also equips students with the technological competencies required to operate effectively in professional and academic contexts.

However, while the benefits of ICT are significant, effective integration requires careful consideration of pedagogical strategies. Merely introducing digital tools into the classroom does not automatically increase the efficiency of competence formation. Successful ICT integration depends on aligning technological applications with learning objectives, providing adequate training for both students and instructors, and designing activities that actively engage learners in meaningful tasks. For instance, employing a digital corpus without instructing students on methods of analysis may limit the development of research competencies. Similarly, collaborative platforms will

e-ISSN 2733-2039 print-ISSN 2733-2144

only enhance communication skills if tasks are structured to promote genuine interaction and critical discussion. Hence, the role of the educator is pivotal in mediating technology use, ensuring that it supports, rather than distracts from, the acquisition of professional competences.

Empirical studies have demonstrated the positive impact of ICT on students' academic performance and professional readiness. Research indicates that students who actively use digital tools in philological education exhibit higher levels of motivation, deeper engagement with course material, and improved research and analytical abilities. Moreover, the integration of ICT encourages lifelong learning habits, as students become proficient in independently seeking and processing information, evaluating sources critically, and adapting to new digital environments. These outcomes align with the overarching goals of higher education in philology, which aim not only to develop theoretical knowledge but also to prepare graduates for dynamic professional environments that demand adaptability, creativity, and technological competence.

In conclusion, ICT serves as a powerful catalyst for increasing the efficiency of forming professional competences among future philologists. By providing access to extensive linguistic and literary resources, fostering collaborative and communicative skills, enabling personalized and adaptive learning, and promoting digital literacy, ICT equips students with the competencies necessary for academic and professional success. Nevertheless, the effectiveness of ICT integration relies on deliberate pedagogical planning, instructor guidance, and the alignment of technological tools with educational objectives. As the field of philology continues to evolve in response to digital transformation, embracing ICT not only enhances the quality of education but also prepares future specialists to navigate and contribute to an increasingly interconnected and technologically mediated world.

Conclusions. The integration of information and communication technologies (ICT) into the educational process has proven to be a significant factor in enhancing the professional competencies of future philologists. The analysis of contemporary research and practical applications demonstrates that ICT not only facilitates access to a wide range of linguistic, literary, and cultural resources but also provides opportunities for interactive and personalized learning. Digital tools, such as language learning platforms, online corpora, virtual libraries, and multimedia content, enable students to engage with authentic materials and develop critical skills in analysis, interpretation, and communication.

Furthermore, the use of ICT promotes the development of digital literacy, which has become an essential component of professional competence for modern philologists. Through online collaboration platforms, students can participate in academic discussions, group projects, and peer evaluations, fostering teamwork and professional communication skills. Additionally, ICT allows for the application of innovative teaching methods, including blended learning, flipped classrooms, and virtual simulations, which enhance motivation, engagement, and the practical application of theoretical knowledge. Empirical studies indicate that students who actively use ICT in their learning process demonstrate higher levels of language

proficiency, analytical thinking, and professional adaptability. Moreover, the integration of ICT prepares future philologists to meet the challenges of a rapidly changing information society, where the ability to effectively use digital resources and communicate in diverse professional contexts is crucial.

In conclusion, ICT serves as a catalyst for the efficient formation of professional competencies in future philologists. Its implementation supports not only the acquisition of subject-specific knowledge but also the development of essential transferable skills, such as digital literacy, critical thinking, and collaborative problem-solving. The strategic use of ICT in philological education, therefore, represents a vital step toward the preparation of highly qualified specialists who are capable of responding to the demands of the contemporary professional environment. Continued research and practice in this area will further optimize educational strategies, ensuring that the full potential of ICT is harnessed to enhance both teaching and learning outcomes in the field of philology.

Funding. The authors declare that no financial support was received for the research, authorship, and/or publication of this article.

Conflict of interest. The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement. The authors declare that no Generative AI was used in the creation of this manuscript.

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