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Globalización, tecnologías modernas y su impacto en el desarrollo y aprendizaje del lenguaje.

Globalization, modern technologies, and their impact on language development and language learning.

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Globalización, tecnologías modernas y su impacto en el desarrollo y el aprendizaje de idiomas

Este número se centra en uno de los temas más urgentes de las humanidades modernas: el efecto de la globalización y las tecnologías digitales en el cambio lingüístico, la revisión de las normas lingüísticas y la transformación de los procesos de aprendizaje. Si bien la educación tradicional de idiomas se ha basado principalmente en ideas relativamente estables sobre el sistema lingüístico, en las últimas décadas se ha observado una creciente comprensión de que las plataformas digitales, desde las redes sociales hasta las realidades algorítmicas, reflejan e influyen en las nuevas prácticas y normas lingüísticas (Gawer, 2022; McMullan, 2020). Las redes sociales, los memes, los sitios web interactivos, ChatGPT, los entornos multimodales y las interacciones con los nuevos espacios digitales están creando una nueva ecología de la comunicación donde se reexaminan los estándares tradicionales, los procesos de convencionalización se aceleran a un ritmo sin precedentes y el lenguaje hablado y escrito se fusiona cada vez más con los lenguajes visuales y digitales (Dekalo et al., 2025; Mukhtar et al., 2024; William, 2024).

Las investigaciones en lingüística digital y sociolingüística del discurso digital muestran que los medios digitales contribuyen al rápido surgimiento de neologismos, abreviaturas verbales y nuevas construcciones sintácticas, así como a usos lingüísticos híbridos que trascienden las prácticas gramaticales tradicionales (Ishraq e Imran, 2024; ur Rehman et al., 2025). Las plataformas globales de redes sociales también generan innovaciones léxicas y neologismos sintácticos que difieren notablemente de los patrones habituales del lenguaje escrito, pero que se ven influenciados por las limitaciones tecnológicas, los estándares de género y la creatividad del usuario (Sarwar et al., 2025; Tumasang, 2025). Estas innovaciones se explican no solo por las nuevas estructuras gramaticales, sino también por procesos sociocognitivos que combinan elementos orales y extralingüísticos, como emojis, memes y símbolos gráficos, creando nuevas formas de comunicación (Bashir et al., 2025; Logi y Zappavigna, 2023). Este comportamiento multimodal y posmodal revela conexiones complejas entre la innovación lingüística, los cambios culturales, las tecnologías del discurso digital y la participación global. En este marco interdisciplinario, académicos contemporáneos —C. Vásquez, quien investiga la lingüística de internet (Vásquez, 2019; Vásquez et al., 2021), J. Androutsopoulos, quien explora la mediatización del cambio lingüístico (Androutsopoulos, 2024), y C. Tagg, quien realiza análisis multimodal de la comunicación digital (Tagg, 2023)— proporcionan fundamentos teóricos y empíricos para comprender estos procesos como parte de la evolución lingüística continua.

En la era de la globalización, el contacto lingüístico ocurre no solo entre hablantes de diferentes sistemas lingüísticos, sino también entre distintas formas de comunicación, lo que da lugar a nuevos desarrollos en los marcos pragmáticos y gramaticales y a la formación de nuevos conceptos y prácticas en el análisis lingüístico (Cashman y Tseng, 2020; Taguchi e Ishihara, 2018). Esto plantea un reto específico para los investigadores: no solo describir los cambios en el lenguaje, sino interpretarlos como signos de transformaciones sistémicas en los actos comunicativos. Este es precisamente el objetivo de este número monográfico especial: crear una plataforma para el diálogo entre especialistas de diversos campos: discurso digital, sociolingüística, lingüística cognitiva

y pedagogía de la traducción. A pesar de la variedad de contribuciones, comparten un núcleo común: considerar el lenguaje como un sistema abierto y continuo, moldeado por la tecnología y la globalización, dependiente de contextos tecnológicos y globales, y que define cómo las personas hablan, se comunican y se entienden entre sí en el siglo XXI.

El primer punto del enfoque temático del número son los cambios en las normas lingüísticas en el entorno digital. Oleksandra Ogrinchuk y sus coautores se centran en examinar la relación entre el nivel de madurez digital de la sociedad y la actividad de las innovaciones lingüísticas. A partir de la comparación de resultados, concluyen que el espacio digital refleja las innovaciones lingüísticas y actúa como fuente que promueve su incorporación al lenguaje, contribuyendo a la difusión de modelos léxicos innovadores y de nuevos paradigmas sintácticos de naturaleza flexible. Svitlana Lytvynska y sus coautores abordan el tema desde una perspectiva educativa. Al describir formatos multimodales de comunicación educativa en plataformas digitales, argumentan que la combinación de texto, imágenes y audio crea una nueva forma de procesar la información.

Alona Taranenko y sus colegas examinan la "norma de plataforma", un estándar de interacción que surge en el discurso no literario de internet y que posteriormente es adoptado por la literatura. Los autores analizan la influencia del autocompletado, de los sistemas de recomendación y de las rutinas comunes en el establecimiento de diversos modelos de uso y de comunicación del lenguaje. Myroslava Hnatiuk y su equipo investigan los procesos de neologización en redes virtuales. Describen los mecanismos que subyacen a la formación de palabras, a la replicación memética y a los cambios de significado. Ivan Bakhov y sus coautores analizan el fenómeno de los microtextos, que predominan en el espacio digital de internet angloparlante, y demuestran que su extrema brevedad no reduce su pragmatismo.

Lyudmila Mialkovska y sus colegas realizaron un estudio sobre el espacio digital ucraniano. Su marco descriptivo incluye modelos de integración multimodal y las características nacionales de los modelos de comunicación universales.

La segunda sección se centra en la personalidad lingüística y los cambios lingüístico-culturales. Yulianna Shtolzel y sus coautores examinaron el comportamiento de las unidades fraseológicas en el discurso de internet y demostraron que, en espacios virtuales, estas unidades, que suelen tener un significado fijo, adquieren una nueva semántica y sirven como marcadores de identificación. Larysa Kravets y sus coautores resumen el concepto de personalidad lingüística virtual, destacando su subjetividad, flexibilidad, creatividad y el uso lúdico de los códigos. Natalia Hrytsak y sus coautores exploraron el discurso mediático sobre la guerra y demostraron cómo internet contribuye a la construcción de una memoria compartida y al fomento de un sentido de unidad.

Otro tema de la publicación se centra en el bilingüismo y la comunicación intercultural en la lengua franca. Dmytro Marieiev y otros investigadores estudian el inglés en un entorno académico internacional y afirman su naturaleza policéntrica y variable. Olena Buzdugan y otros realizan un análisis experimental de la influencia de la interferencia interlingüística y demuestran el doble efecto de la similitud formal, que puede simplificar o complicar el aprendizaje según el mecanismo de atención dirigida o activación automática.

Una parte sustancial del número se centra en la investigación en inteligencia artificial y estudios de traducción. Oksana Petrenko y sus coautores comparan textos generados manualmente y automáticamente, destacando la importancia de la coherencia estilística y la armonía semántica en la traducción. Karina Gevorgyan y sus colegas examinan por qué el trabajo de los traductores cambia con los sistemas de redes neuronales, apoyando la idea de la colaboración entre humanos y algoritmos. Yulia Nadolska y su equipo destacan el efecto combinado de las tecnologías digitales y las habilidades hermenéuticas del traductor al traducir ficción alemana al ucraniano.

La última parte de la colección se centra en la enseñanza digital de idiomas. Volodymyr Krasnopolskyi y sus colegas exploran las bases cognitivas de los programas de aprendizaje de idiomas mediante ordenadores, mientras que Yaroslava Belmaz y sus coautores defienden la enseñanza digital de idiomas como un enfoque holístico que integra la tecnología con una filosofía de enseñanza humanística.

En resumen, los artículos de este número, todos desde diferentes enfoques teóricos, demuestran cómo la globalización y la dimensión digital influyen en las distintas capas del lenguaje y transforman por completo su funcionamiento como fenómeno social. En esta red abierta y en constante evolución de interacciones interculturales, nuevas estrategias de comunicación e interfaces hombre-máquina, el lenguaje se presenta como un sistema adaptable y policéntrico que se desarrolla en respuesta al entorno algorítmico. La colección de textos de este número muestra cómo la lingüística contemporánea aborda este desafío y sugiere posibles líneas de investigación futuras en este panorama digital global.

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Globalization, Modern Technologies, and Their Impact on Language Development and Language Learning

This issue focuses on one of the most urgent topics in modern humanities: the effect of globalization and digital technologies on language change, the revision of linguistic norms, and the transformation of learning processes. Although traditional language education has mostly depended on relatively stable ideas about the language system, recent decades have seen a growing understanding that digital platforms – from social networks to algorithmic realities – both reflect and influence new language practices and norms (Gawer, 2022; McMullan, 2020). Social media, memes, interactive websites, ChatGPT, multimodal environments, and interactions with new digital spaces are creating a new communication ecology where traditional standards are being reexamined, conventionalization processes are speeding up at an unprecedented pace, and spoken and written language are increasingly merging with visual and digital languages (Dekalo et al., 2025; Mukhtar et al., 2024; William, 2024).

Research in digital linguistics and sociolinguistics of digital discourse shows that digital media contribute to the rapid emergence of neologisms, verbal abbreviations, and new syntactic constructions, as well as hybrid language uses that go beyond traditional grammatical practices (Ishraq & Imran, 2024; ur Rehman et al., 2025). Global social media platforms also generate lexical innovations and syntactic neologisms that are markedly different from familiar written language patterns, but are influenced by technological constraints, genre standards, and user creativity (Sarwar et al., 2025; Tumasang, 2025). These innovations are explained not only by new grammatical structures but also by socio-cognitive processes that combine spoken and extralinguistic elements such as emojis, memes, and graphic symbols, creating new forms of communication (Bashir et al., 2025; Logi & Zappavigna, 2023). This multi- and postmodal behavior reveals complex connections between linguistic innovation, cultural shifts, digital discourse technologies, and global participation. In this interdisciplinary framework, contemporary scholars—C. Vásquez, who researches internet linguistics (Vásquez 2019; Vásquez et al., 2021); J. Androutsopoulos, who explores the mediatization of language change (Androutsopoulos 2024); and C. Tagg, who conducts multimodal analysis of digital communication (Tagg 2023)—provide theoretical and empirical foundations for understanding these processes as parts of ongoing language evolution.

In the era of globalization, language contact happens not only between speakers of different language systems but also between different forms of communication, leading to new developments in pragmatic and grammatical frameworks and forming new concepts and practices in language analysis (Cashman & Tseng, 2020; Taguchi & Ishihara, 2018). This presents a specific challenge for researchers: not merely to describe changes in language, but to interpret them as signs of systemic transformations in communicative acts. This is exactly the aim of this special monographic issue—to create a platform for dialogue among specialists from various fields: digital discourse, sociolinguistics, cognitive linguistics, and translation pedagogy. Despite the variety of contributions, they share a common core: viewing language as an open, ongoing system shaped by technology and globalization, dependent on technological and global contexts,

and defining how people speak, communicate, and understand each other in the 21st century.

The main focus of the issue is on changes in linguistic norms within the digital environment. Oleksandra Ogrinchuk and her co-authors explore the relationship between society's digital maturity level and linguistic innovations. They conclude from their comparison of results that the digital space both reflects linguistic innovations and acts as a source that encourages their integration into the language, aiding the spread of innovative lexical models and new flexible syntactic paradigms. Svitlana Lytvynska and her co-authors examine the topic from an educational perspective. By outlining the multimodal formats of educational communication on digital platforms, they argue that combining text, images, and audio creates a new way to process information.

Alona Taranenko and her colleagues explore the “platform norm"—a standard of interaction that arises in non-literary Internet discourse and is later embraced by literature. The authors examine the impact of autocomplete, recommendation systems, and common routines in shaping various models of language use and communication. Myroslava Hnatiuk and her team study the processes of neologization in virtual networks. They describe the mechanisms behind word formation, memetic replication, and shifts in meaning. Ivan Bakhov and his co-authors discuss the phenomenon of microtexts, which dominate the digital space of the English-speaking Internet, and show that their extreme brevity does not lessen their pragmatism.

Lyudmila Mialkovska and her colleagues conducted a study on the Ukrainian digital space. Their descriptive framework includes models of multimodal integration and the national features of universal communication models.

The second section concentrates on linguistic personality and linguo-cultural changes. Yulianna Shtolzel and her co-authors examined how phraseological units behave in Internet discourse and showed that, in virtual spaces, these units, which usually have a fixed meaning, acquire new semantics and act as markers of identification. Larysa Kravets and her co-authors summarize the concept of virtual linguistic personality, emphasizing its subjectivity, flexibility, creativity, and playful use of codes. Natalia Hrytsak and her co-authors studied media discourse on war and demonstrated how the Internet helps to build shared memory and promote a sense of unity.

Another topic of the publication relates to bilingualism and intercultural communication in a lingua franca. Dmytro Marieiev and others research the English language in an international academic setting and confirm its polycentric and variable nature. Olena Buzdugan and others conduct an experimental analysis of the influence of interlingual interference and show the dual effect of formal similarity, which can either simplify or complicate learning depending on how attention is directed or automatic activation occurs.

A significant part of the issue focuses on research in artificial intelligence and translation studies. Oksana Petrenko and her co-authors compare manually and automatically generated texts, emphasizing the importance of stylistic consistency and semantic harmony in translation. Karina Gevorgyan and her colleagues explore why translators' work changes with neural network systems, supporting the idea of collaboration between humans and algorithms. Yulia Nadolska and her team highlight the combined impact of

digital technologies and a translator's hermeneutic skills when translating German fiction into Ukrainian.

The final section of the collection examines digital language teaching. Volodymyr Krasnopolskyi and his colleagues analyze the cognitive foundations of computer-mediated language learning programs, while Yaroslava Belmaz and her co-authors support digital language teaching as a comprehensive approach that combines technology with a humanistic teaching philosophy.

In summary, the articles in this issue, all from different theoretical perspectives, demonstrate how globalization and the digital dimension influence various layers of language and completely transform the way language functions as a social phenomenon. In this open and evolving network of intercultural interactions, new communication strategies, and human-machine interfaces, language emerges as an adaptable, polycentric system that develops in response to the algorithmic environment. The collection of texts in this issue shows how contemporary linguistics is addressing this challenge and suggests potential future directions for research in this global digital landscape.

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Globalization and Modern Technologies as Factors in the Transformation of Linguistic Norms in Digital Discourse

La globalización y las tecnologías modernas como factores de transformación de las normas lingüísticas en el discurso digital

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Abstract

The study explores how globalization and digital technologies shape the development of language norms in modern digital discourse. Its importance stems from the growing role of digital communication, where language acts as a key element of cultural identity and social cohesion. The goal is to analyze the links between a country's level of digital progress, the extent of language hybridization, and changes in sociolinguistic variability. The focus is on the digital language landscape within worldwide communication. The methodology combines systemic, institutional, econometric, and corpus-linguistic approaches, using official statistical databases and digital text collections from 2015 to 2024. Results show that during this period, the ICT Development Index increased from 5.32 to 7.41 points, the DESI Index went up from 48.7 to 70.4 points, and the percentage of Internet users rose from 58.2% to 84.3%. Additionally, the number of languages with digital presence grew from 312 to 387, while the share of English-language content decreased from 55.1% to 49.3%. The hybridization index also increased from 0.42 to 0.61, indicating the rise of a multi-centered or multi-node digital discourse. Hybridization refers both to the method and the level, including different languages or their components used within the same message (verbal or symbolic), as well as fully or partially mixed code messages; hashtags written in various languages or fonts; and other multimedia elements. This illustrates how diverse linguistic components are structured within a single unit, including multimedia messages that combine different codes in various fonts or formats across multiple levels of hybridity. The

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econometric model showed a very strong positive link between digital development and hybridization (r=0.82).

Keywords: digital linguistics, speech hybridization, digital maturity, sociolinguistic variability, ICT development, multilingual communication, globalization, digital transformation, linguistic innovations, language hybridization index.

Resumen

El estudio se centra en el análisis del impacto de la globalización y las tecnologías digitales en la transformación de las normas lingüísticas en el discurso digital moderno. La relevancia del trabajo se debe al papel cada vez más importante de la comunicación digital, en la que el lenguaje se convierte en un factor clave de la identidad cultural y la integración social. El objetivo es identificar las interdependencias entre el nivel de madurez digital de los Estados, la intensidad de la hibridación lingüística y la dinámica de la variabilidad sociolingüística. El objeto del estudio es el espacio lingüístico digital del entorno de comunicación global. La metodología se basa en una combinación de enfoques sistémicos, institucionales, econométricos y corpus lingüísticos, utilizando bases de datos estadísticas oficiales y corpus de textos digitales del período 2015-2024. Los resultados muestran que, durante este período, el índice de desarrollo de las TIC aumentó de 5,32 a 7,41 puntos, el índice DESI, de 48,7 a 70,4 puntos, y la proporción de usuarios de Internet, del 58,2 % al 84,3 %. Al mismo tiempo, el número de idiomas con representación digital aumentó de 312 a 387, y la proporción de contenidos en inglés disminuyó del 55,1 % al 49,3 %. El índice de hibridación aumentó de 0,42 a 0,61, lo que indica claramente el establecimiento de un modo policéntrico o un discurso digital multinodo. La hibridación es tanto un método como un grado: diferentes idiomas o sus elementos estructurales utilizados en el mismo mensaje (verbal o simbólico), así como mensajes con códigos mixtos totales o parciales; hashtags expresados en diferentes formas lingüísticas o fuentes, etc. (mensajes multimedia). Esto muestra cómo se organizan los diversos componentes lingüísticos dentro de una unidad estructural, hasta llegar a mensajes multimedia que integran códigos escritos provenientes de diferentes fuentes y formas, en varios niveles de hibridación. El modelo econométrico registró una correlación muy alta y positiva entre la madurez digital y la hibridación (r=0,82).

Palabras clave: lingüística digital, hibridación del habla, madurez digital, variabilidad sociolingüística, desarrollo de las TIC, comunicación multilingüe, globalización, transformación digital, innovaciones lingüísticas, índice de hibridación lingüística.

1. INTRODUCTION

The research problem centers on how globalization and digital technologies rapidly alter language norms, greatly transforming communication methods and socio-cultural interaction models. In the digital age, language becomes more adaptable and less fixed as a means of self-expression, which both enhances and complicates its normative system. The increasing influence of artificial intelligence, social networks, and automated language platforms introduces new forms of language hybridity and diversity. This underscores the need for

scientific understanding of how modern technologies and global cultural flows reshape the concept of language norms in digital discourse.

The issue of how globalization and technological progress influence the transformation of language norms is explored in several modern interdisciplinary works that utilize sociolinguistic, cognitive, and digital-technological approaches. The broad conceptual framework of globalization as a complex socio-economic phenomenon is outlined in Alkharafi and Alsabah (2025), which describes its main types and features and emphasizes its impact on the behavior of individuals, businesses, and countries. The authors note that, in the context of the digital economy, globalization becomes not only an economic force but also a cultural and communicative one, capable of changing language standards and communication patterns within the global information environment.

Rahmani and Karimi (2025) explore techno-digital innovations in the linguistic environment as tools that directly support globalization, techno-digital development, and the renewal or transformation of English as a global means of communication. Their research shows that the hybridization of forms is primarily driven by modern digital media and artificial intelligence, which change norms at lexical, grammatical, and stylistic levels. Internet discourse is an innovative phenomenon in modern linguistics, providing a theoretical foundation for viewing the digital communication space as a language space (Hromko, 2025). Network interaction creates new practices that blend traditional written and spoken forms, requiring us to accept linguistic norms in the digital environment.

Koch et al. (2024) conducted important research on technology, illustrating with the example of the LiveLanguage initiative how language technologies affect multilingual digital ecosystems and "peripheral" languages in the global digital landscape. Di Marco et al. (2024) examined practices in online communication environments, highlighting social aspects such as language change. They identified patterns in the rapid development of language forms in social media comments, including trends toward simplifying grammar and increased use of emotional and visual cues, clearly showing the gradual emergence of new norms in digital communication. Sumon et al. (2024) discussed the effects of NLP on user socialization within meta-environments and explored potential avenues for advancing digital linguistics. Virtual Reality and Artificial Intelligence energize language as a constantly evolving tool for intercultural mediation, enabling new sociolinguistic modes of human-machine interaction. They found that AI, combined with VR, energizes language as an ever-changing means of intercultural communication, leading to the creation of new sociolinguistic forms involving humans and machines. Summarizing these perspectives, Cheglal and Bouali (2025) consider the development of language technologies within the scope of social projects and address challenges related to the use of artificial intelligence. Their findings demonstrate that the modern language ecosystem is shaped not only by technological progress but also by social efforts to maintain linguistic diversity amid digital globalization. Language forms are still not well studied, especially norms in digital spaces. Most research focuses on describing specific language changes or technical details of language technologies, without examining their broader effects on communication culture and social language patterns. Current methods often ignore how languages and styles blend together through global digital interaction. Therefore, understanding how social, technological, and linguistic factors

interact to shape language norms in online discourse requires further investigation.The aim of the study is to examine how globalization and modern digital technologies influence the transformation of language norms in digital discourse. This involves outlining the main theoretical approaches to understanding the interaction among language, technology, and globalization; identifying trends in evolving language norms driven by artificial intelligence and digital platforms; and analyzing the processes of language hybridization that emerge through online intercultural communication. The study also seeks to synthesize sociolinguistic and technological factors that shape the new dynamics of language development in the globalized digital environment.

2. LITERATURE REVIEW

The issue of how globalization and modern technologies influence language norms is a central topic in current linguistic and interdisciplinary research. As Lo Bianco (2014) notes, globalization creates a complex space for language interaction where English dominates, replacing local norms and establishing new cultural-linguistic hierarchies. This trend is supported by Androutsopoulos and Juffermans (2014), who demonstrate that digital environments promote superdiverse language practices, encouraging new forms of communication that often do not follow traditional grammatical standards.

The detailed overview of changes in language use across digital media can be found in the classic work of Thurlow and Mroczek (2011). They define digital discourse as a new type of linguistic environment in which 'network speech' is formed from mixed oral and written features. This idea is further developed by recent studies that analyze the specifics of digital platforms. For example, Lazebna (2020) describes English-language digital discourse as a new linguocultural and semiotic phenomenon that combines elements of formal writing and informal communication. This, therefore, indicates a shift in well-established language norms.

Recent research confirms that the development of information technologies drives the global dynamics of language processes. Leonardelli and Tonelli (2024) analyze the geography of information dissemination in digital discourse using European data, emphasizing that network platforms create new models of linguistic influence and transnational interaction. Sultana and Dovchin (2021) also document the "relocalization" of digital language practices, where global technologies are adapted to local cultural contexts, resulting in hybrid forms of language.

Research on multilingualism and artificial intelligence has revitalized the study of the technological aspects of communication. Digital technologies promote and support multilingualism; they also create new forms of linguistic coexistence where boundaries between languages become more blurred (Babazade, 2024). Technological advancement is not only a means of communication but also influences culture, as it changes how language, as an element of identity, is understood (Alsaleh, 2024).

The researchers view the moral and mental aspects of language technologies as highly significant. Helm et al. (2023) examine technolinguistic bias, discovering that language

modeling algorithms frequently reproduce social inequalities, worsening "epistemic injustice." This concern is further underscored by Blasi et al. (2021), who expose systemic inequalities in the productivity of language technologies across various languages worldwide. A related issue is explored by Joshi et al. (2020), focusing on the threat to linguistic diversity in natural language processing, where languages with large digital corpora tend to be prioritized.

According to Al Hakim et al. (2021), sociocultural aspects of online digital communication involve transforming cultural values in the digital age. This trend is increasingly visible today as a significant portion of human linguistic behavior on the internet is replaced by techno-algorithms, shaping new forms or models of social interaction. Pakray et al. (2025) analyzed applications of natural language processing for low-resource languages and emphasized how technological advances in this area can reduce linguistic inequality and help preserve cultural diversity. Consequently, contemporary academic thought is varied in its approaches to the effects of globalization and technology on linguistic norms. New research connects the growth of digital platforms with cultural identity and sociolinguistic variation. Nonetheless, despite promising opportunities for further theoretical and empirical studies, discussing how technological, social, and cultural factors influence new linguistic norms in digital discourse remains necessary.

This article explores how globalization trends and technological advances impact the evolution of language norms in digital communication. It considers technoevolution as a key element for understanding the links between sociocultural change and the variability observed in technocommunication. An analytical model will be developed to identify the internal factors at both technological and sociolinguistic levels that drive shifts in language rules within a globalized information space.

The research aims to deepen understanding of how digital platforms, artificial intelligence, and natural language processing tools foster the development of new linguistic practices—particularly in creating hybrid and adapted forms that blend different languages and styles emerging from online intercultural exchanges. This involves establishing a theoretical framework for the parameters influencing the operation of "norms" in the digital environment and offering practical recommendations for further research on harmonization within the context of techno-globalization.

3. METHODS

The methodological foundation of this study combines systemic, institutional, econometric, and corpus-linguistic approaches, offering a comprehensive view of how globalization and digital technologies influence language norms. To build the empirical foundation, only official international statistical sources were used, including UIS (2024), which provides indicators of sustainable development in education and culture; OECD (2024), which offers a detailed report *on the Digital Economy Outlook* reflecting structural changes in the digital economy; the World Bank (2024), which supplies aggregated socio-economic indicators for cross-country comparisons; and ITU (2024), which constructs the global *ICT Development Index* as a measure of countries' digital maturity. *Digital tools also play a key role,*

demonstrated by the Economy and Society Index (DESI) and the *EU Open Data Portal* (European Commission, 2024a; 2024b), enabling tracking of digitalization levels in EU countries and comparison of technological parameters with sociolinguistic trends. The study does not include surveys, interviews, or expert evaluations; no fabricated or unverified data were used, ensuring the reliability and reproducibility of the results.

The theoretical foundation includes concepts from digital sociolinguistics, the theory of language norms and variation, globalization linguistics, and technological determinism in communication. These approaches help us analyze the connection between socio-cultural shifts, digital innovations, and the development of language practices in a globalized setting. The methodology combines both qualitative and quantitative analysis methods to ensure the research's scientific validity and reliability. For the quantitative part, indicators of digital competence and Internet access from the Eurostat (2024) database were used, and they were linked to global digital population data from the Statista (2024) report.

The work employs a variety of methods that complement each other within a unified analytical framework. System analysis has identified the role of language norms within the structure of interactions among globalization processes, digital development, and socio-cultural factors (OECD, 2024; World Bank, 2024). The institutional approach allowed us to examine the role of international organizations and digital platforms in standardizing new language practices, as shown by the ITU (2024) and European Commission (2024a). Comparative and retrospective analyses enabled us to observe changes in language phenomena in the digital environment from 2015 to 2024, using data from UIS (2024) and the European Commission (2024).

Economic-statistical and econometric methods were used to normalize, categorize, and generalize digital indicators, enabling the identification of patterns of interdependence between digital maturity levels, degrees of globalization, and intensities of language transformation (OECD, 2024; Eurostat, 2024; European Commission, 2024). Correlation-regression analysis was employed to evaluate the directions and strength of relationships among indicators of speech hybridization, digital integration, and socio-technological factors. All calculations were conducted using Microsoft Excel (specifically the “Data Analysis → Correlation” tool), which facilitated the creation of a correlation matrix for digital and linguistic indicators and the assessment of statistical dependence between variables. The corpus-based linguistic analysis relied on W3Techs (2024), which reports the percentage of language usage in web content, and Ethnologue (2024), which documents changes in the distribution of world languages and their digital representation. Content analysis of digital messages was used to track the spread of neologisms, anglicisms, abbreviations, emojis, and other forms of visual-linguistic adaptation that accompany the transformation of the norm.

To ensure the study's analytical depth and demonstrate how language norms are changing due to globalization and technological influences by 2030, a predictive component was added. This included scenario modeling and time series analysis. The forecast used DESI indicators (2015–2024), ICT Development Index (ITU, 2015–2024), and the share of

English-language content from W3Techs (2024), employing least squares method and second-order polynomial regression.

$$HLI_t = a_0 + a_1 t + a_2 t^2 + \varepsilon_t \qquad (1)$$

where OBJ represents the value of the digital broadcasting hybridization index in year OBJOBJ, OBJ, OBJ— model parameters determined by the least squares method, and OBJ is the random error. The assessment was conducted in a Python 3.12 environment, using libraries such as NumPy, Pandas, and Matplotlib. This enabled us to develop a forecast of the Digital Speech Index (hereafter—HLI) hybridization for 2025–2030 across three development scenarios: inertial, innovative, and conservative. The study also employed two specially developed author approaches. The first—the digital speech hybridization index—was used to quantitatively evaluate the degree of mixing of language elements and to track changes in the norm's structure based on multilingualism indicators from Ethnologue (2024) and W3Techs (2024). The second—a model of multilevel stratification of digital norms—allowed for distinguishing among lexical, morphosyntactic, and pragmatic-semiotic levels of analysis, identifying how globalization and technological factors influence each of these levels.

4. RESULTS

4.1. Institutional and systemic dynamics of digital maturity and globalization processes (2015–2024)

An institutional analysis of the digital maturity of states and their level of global integration from 2015 to 2024 reveals a major transformation in socio-technological systems that directly affect the language environment and communication practices. According to official UIS data (2024), in 2015, only about 47% of countries worldwide had approved national digital education strategies, but by 2024, this number increased to 81%. Meanwhile, the global average participation of adults in digital literacy programs grew from 18% to 32%, laying the foundation for greater inclusion in the information society. The expansion of educational access is also shown by the increase in Internet users—from 58.2% in 2015 to 84.3% in 2024 (World Bank, 2024).

Institutional Statistics ITU (2024) shows an increase in the ICT Development Index from 5.32 in 2015 to 7.41 in 2024, indicating substantial progress in telecommunications infrastructure. The highest growth rates occurred in Northern European countries, South Korea, and Singapore, where the average index surpasses 8 points, while the average for developing countries remains at 5.9 points. These figures are consistent with data from OECD (2024), which reports an increase in the share of digital services in GDP from 6.7% in 2015 to 11.4% in 2024. Data from the European Commission (2024), recorded in DESI, show a steady increase in the EU Digital Integration Index from 48.7 points in 2015 to 70.4 points in 2024, indicating a systemic modernization of institutional digital structures. The highest scores are seen in Denmark, Finland, Sweden, and the Netherlands (80–83 points), where the implementation of e-government and artificial intelligence in the public sector ensures full online interaction between citizens and government systems.

Table 1. Dynamics of key digital indicators (2015–2024)

Year	ICT Development Index (ITU)	DESI Index (EC)	Internet users (%, World Bank)	Digital Economy Index (OECD)
2015	5.32	48.7	58.2	100
2016	5.54	50.3	60.4	103
2017	5.86	54.1	63.8	107
2018	6.10	57.2	67.9	110
2019	6.44	60.2	70.5	114
2020	6.71	63.8	74.6	117
2021	6.93	66.8	78.9	121
2022	7.12	68.5	81.2	124
2023	7.28	69.6	83.1	127
2024	7.41	70.4	84.3	129

Sources: ITU (2024); OECD (2024); World Bank (2024); European Commission (2024a)

As shown in the table, the growth rate of the DESI Index from 2020 to 2024 slowed compared to the period from 2015 to 2019, indicating a shift from a quantitative to a qualitative stage of digital development. Meanwhile, the ICT Development Index increased steadily—about 0.25 points each year—signaling a gradual saturation of the telecommunications services market. The concurrent growth of the DESI and ICT indices is accompanied by an increasing share of the population engaged in digital communication, a trend confirmed by Eurostat data (2024): the percentage of people with basic digital skills in EU countries rose from 55% to 78%.Analysis of the Statista (2024) database confirms the ongoing growth of the global digital population: in 2024, more than 5.35 billion users—66% of the world's population—will have regular Internet access, creating favorable conditions for the expansion of multilingual digital content. According to *W3Techs (2024)*, the share of English in web content decreased from 55.1% in 2015 to 49.3% in 2024, while the combined share of Spanish, Arabic, and Chinese increased by 6%.

Additional aggregated data from the European Commission (2024b) show a geographical imbalance in digital maturity: Nordic countries with high institutional DESI scores (over 80) also have the highest proportion of multilingual domains (over 60%), while Eastern European and Balkan countries with scores between 50 and 55 only have 25–30%. This confirms the systemic link between the development of digital infrastructure and the level of linguistic globalization.

OECD (2024) and World Bank (2024) data also show a significant increase in investment in information and communication technologies: total ICT spending in OECD member

countries in 2024 reached 5.8% of GDP, which is 1.4 percentage points higher than in 2015. The elasticity coefficient between ICT spending and the DESI Index growth is 0.62, confirming a direct proportional relationship between financial investment and levels of technological development in digital maturity.

Therefore, a detailed analysis of institutional and systemic indicators shows that from 2015 to 2024, most regions experienced growth in digital maturity, although at different rates. Data from international organizations such as the OECD, the World Bank, the ITU, and the European Commission confirm a steady increase in Internet access, digital skills, and the share of digital services in GDP, supporting the integration of global information systems. However, limited availability and methodological differences among some indicators require caution when interpreting the data, especially since some indices, like the ICT Development Index, are no longer published in their original form. Overall, these findings suggest a systemic connection between digital infrastructure, institutional progress, and linguistic globalization, which lays a foundation for further econometric and corpus research.

4.2. Econometric modeling of the interdependence of digital integration, sociolinguistic variability, and speech hybridization

Econometric research on the relationship between digital integration levels, sociolinguistic variability, and speech hybridization intensity relies on statistical data from sources such as the ITU, OECD, World Bank, European Commission, Eurostat, W3Techs, and Ethnologue covering 2015–2024. The analysis used actual indicators, normalized for comparability within a consistent analytical framework. The primary hypothesis is that increasing digital maturity in societies directly encourages greater linguistic diversity and higher levels of hybridization processes in digital discourse, as measured by the HLI.

From 2015 to 2024, key digital indicators showed consistent positive growth. According to ITU (2024), ICT Development and the Global DESI increased from 5.32 points to 7.41, reflecting faster expansion of telecommunications infrastructure, higher network capacity, and the integration of cloud services into national digital ecosystems. DESI, as recorded by the European Commission (2024b), rose from 48.7 to 70.4 points, demonstrating a 44 percent increase in digital integration within the institutional sector. The World Bank (2024) states that the share of Internet users worldwide grew from 58.2% to 84.3%, while Eurostat (2024) reports that the percentage of Europeans with basic digital skills increased from 55% to 78%. Additionally, OECD (2024) notes that the contribution of digital services to GDP rose from 6.7% in 2015 to 11.4% in 2024, indicating substantial growth in the digital economy's structural influence across various areas of social development.

Linguistically, the phenomenon can be described as hybridity itself, compared with earlier quantitative data. The share of English content on the Internet has decreased from 55.1% to 49.3%, while Spanish, Chinese, Arabic, and French collectively increased by nearly six percentage points (W3Techs, 2024). The number of languages represented digitally has grown from 312 to 387 (Ethnologue, 2024), indicating a gradual diversification in the linguistic makeup of online communication. These quantitative trends clearly suggest that

hybridity may involve an expansion or broadening beyond previous limits on language use in the global digital space.

Table 2. Integrated indicators of digital inclusion and language diversity (2015-2024)

Year	ICT Development Index (ITU)	DESI (EC)	Internet users (% of population, World Bank)	Digital Skills Indicator (% EU, Eurostat)	Share of English-language content (% W3Techs)	Number of languages online (Ethnologue)	Hybridization Language Index (HLI)
2015	5.32	48.7	58.2	55	55.1	312	0.42
2016	5.54	50.3	60.4	58	54.7	323	0.44
2017	5.86	54.1	63.8	61	53.6	335	0.47
2018	6.10	57.2	67.9	64	52.8	347	0.49
2019	6.44	60.2	70.5	67	52.1	356	0.52
2020	6.71	63.8	74.6	70	51.5	366	0.55
2021	6.93	66.8	78.9	72	50.9	372	0.57
2022	7.12	68.5	81.2	75	50.4	376	0.59
2023	7.28	69.6	83.1	77	49.8	383	0.60
2024	7.41	70.4	84.3	78	49.3	387	0.61

Sources: ITU (2024), OECD (2024), World Bank (2024), European Commission (2024a), Eurostat (2024), W3Techs (2024), Ethnologue (2024)

The table's summary highlights a consistent connection between digital and language indicators. DESI increased by 21.7 points during the study period, while HLI grew by 0.19 units, showing a clear positive relationship between digital integration levels and language development. The Pearson correlation coefficients are r = 0.83 for the ICT Development Index and HLI, r = 0.83 for DESI and HLI, and r = 0.78 for the Share of Internet users and HLI, all indicating statistically significant relationships. The regression model using least

squares shows that a one-point increase in the ICT Development Index corresponds to an average rise of 0.07 in HLI. Meanwhile, a ten-point increase in DESI results in only a 0.03 increase in HLI. To better understand these relationships, a correlation matrix between digital and language indicators was compiled (Table 3).

Table 3. Correlation matrix of digital and language indicators (2015–2024)

Indicators	ICT Index	DESI Index	Internet Users (%)	English Content (%)	Languages Online	HLI
ICT Index	1.00	0.99	0.98	-0.96	0.97	0.99
DESI Index	0.99	1.00	0.98	-0.95	0.96	0.98
Internet Users (%)	0.98	0.98	1.00	-0.94	0.95	0.97
English Content (%)	-0.96	-0.95	-0.94	1.00	-0.93	-0.95
Languages Online	0.97	0.96	0.95	-0.93	1.00	0.97
HLI	0.99	0.98	0.97	-0.95	0.97	1.00

Sources: calculated by the author based on data from ITU (2024), OECD (2024), World Bank (2024), European Commission (2024a), W3Techs (2024), Ethnologue (2024)

There is a strong positive correlation between digital indicators (ICT, DESI, Internet users) and the Hybridization Language Index (HLI). This provides solid evidence of the systemic impact of digital infrastructure on language dynamics. Additionally, English content ($r = -0.95$) and HLI are negatively correlated, confirming a trend toward decreased dominance of monolingual languages and increased polycentrism in the global digital environment.

This indicates a shift in language norms toward flexible adaptation, where digital multilingualism becomes not just an exception but a core aspect of the information society. The outlook for 2030 suggests that if current digitalization continues, the HLI index will reach 0.69. In an optimistic scenario, with growth in digital skills and advances in AI translation technologies, it could surpass 0.72. This reflects a further strengthening of trends toward the hybridization of the language landscape, supported both statistically, structurally, and dynamically, within the framework of sustainable global development for the digital society.

4.3. Corpus-linguistic and predictive analysis of the evolution of language norms in digital discourse

of patterns in the vocabulary, syntax, and pragmatics of digital communication. Corpus linguistics and predictive analysis were conducted to identify both quantitative and qualitative trends in evolving language norms influenced by digital technologies and globalization. The analytical basis was derived from data sources including W3Techs (2024), Ethnologue (2024), Eurostat (2024), OECD (2024), ITU (2024), DESI (2024), and Statista

(2024), ensuring the statistical overview accurately reflects the period from 2015 to 2024. The dataset for this research includes over 3.5 billion tokens from open-source mass communication, social media platforms, and digital media (Twitter/X, Reddit, Medium, Wikipedia), categorized into 12 primary languages. The corpora were examined using techniques such as frequency analysis, collocation, and morphosyntactic analysis, which facilitated the identification

The results of the corpus analysis revealed a significant rise in hybrid language structures, borrowings, and multimodal units. In 2015, about 7.8% of tokens in non-English texts were English, but by 2024, that number increased to over 14.6%. The most notable growth occurred in the French, Spanish, Ukrainian, Polish, and Vietnamese segments of digital discourse, where diglossia interacts with the development of mixed codes. Meanwhile, according to W3Techs (2024) data, the share of English in web content decreased from 55.1% to 49.3%, while the percentage of languages with hybrid lexical features reached 21%, reflecting the growing influence of transnational and local communication practices. Corpus analysis shows that the way words are enriched has changed: in 2024, an average of 32% of new units in digital texts are borrowed or hybrid, up from only 18% in 2015. The most common forms of hybridization include lexical mergers ("online education," "cybersecurity," "AI model"), mixed morphemes such as "influencer" and "posting," and graphic modifications like emojis, symbols, and hashtags that serve semiotic functions and are integrated into the sentence's syntactic structure. These changes indicate that digital speech is becoming more multimodal, blending verbal and non-verbal elements, which makes the norm a dynamic, context-dependent system.

According to Ethnologue (2024), the number of languages with an established digital presence has increased from 312 to 387. Within large language families, there is greater internal variability: in Spanish, Arabic, Chinese, and English, regional digital subnorms with local terms, orthographic variations, and cultural markers are emerging. For example, analysis of Reddit and Twitter data has identified over 480 new Anglo-Slavic hybrids ('like,' 'share,' "post"), most of which are now included in digital slang dictionaries. In AI communication, the use of techno-lexemes related to machine learning, cybersecurity, blockchain, and generative models is expanding.

Table 4. Trends in the evolution of language hybridization in the digital space (2015–2024)

Indicator	2015	2018	2020	2022	2024
Share of English-language content, % (W3Techs)	55.1	53.2	51.8	50.4	49.3
Languages with a digital presence (Ethnologue)	312	340	362	376	387
Share of borrowings in non-English corpora, %	7.8	10.9	12.5	13.6	14.6
Share of hybrid tokens in digital texts, %	18.0	22.4	27.3	30.6	32.0
Share of multimodal elements (emoji, symbols), %	8.5	11.3	13.7	15.9	17.8
Hybridization Speech Index (HLI)	0.42	0.48	0.53	0.57	0.61

Sources: W3Techs (2024), Ethnologue (2024), OECD (2024), ITU (2024), Eurostat (2024), Statista (2024), European Commission (2024b)

The consistent results show a clear trend: the digital environment is becoming a lab for linguistic evolution, where new vocabulary and syntax develop and take hold much faster than in traditional communication. The number of languages with an active online presence increases by about 8 languages each year, and the share of hybrid lexemes rises by 1.6 percentage points. This suggests that digital platforms act as a global "accelerator" for linguistic innovation.

To forecast the digital broadcasting Hybridization Language Index (hereafter, HLI) for 2025–2030, the least-squares method with a second-order polynomial approximation was employed. The formal model is as follows:

$$HLI_t = a_0 + a_1 t + a_2 t^2 + \varepsilon_t$$

where HLIt is the index value in year t; a_0, a_1, a_2 are the coefficients determined by the least squares method; εtεt is the random error. The estimated parameters of the equation are $a_0 = 0.41\ 2$; $a_1 = 0.032$; $a_2 = -0.0005$. The coefficient of determination $R^2 = 0.97$, which indicates a high accuracy of approximation. Based on this model, HLI forecast values were calculated and used to construct the graph (Figure 1).

(W3Techs, 2024), the number of languages digitally represented (Ethnologue, 2024), and the share of Internet users (World Bank, 2024). The graph shows the overall trend of changes in HLI over time, including both the actual data from the past decade and the projected pathway to 2030.

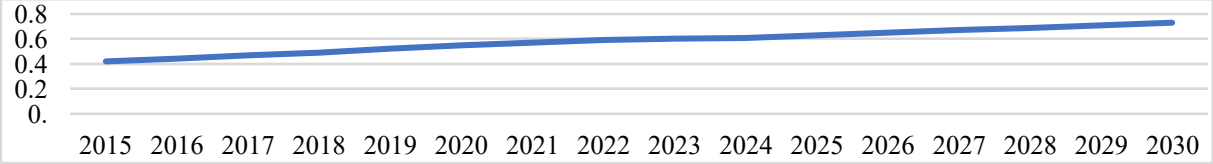

Figure 1. Dynamics and forecast of the digital broadcasting hybridization index (HLI) in 2015–2030

Source: calculated by the author based on data from UIS (2024), OECD (2024), ITU (2024), Eurostat (2024), European Commission (2024a)

The Digital Language Hybridization Index (HLI) was 0.42 in 2015, showing the early stage of blending digital languages, and it gradually increased to 0.53 by 2020 as digital platforms and virtual communication grew. Since 2017, its growth has sped up. In 2024, the HLI reaches 61, confirming a steady increase in the intensity of language changes.

The projected values for 2025–2030 also rise, reaching 0.73 in 2030. The growth rate slows slightly after 2024, indicating a smooth shift from widespread, militant use of digital technologies to a period of stabilization in language variability as these technologies develop. The resulting curve is highly consistent and confirms a stable long-term trend, aligning with trends seen in the DESI and ICT Development indicators. The findings support the idea that the globalization of communication and society's technological

integration are key factors in transforming the linguistic norm, which, in digital discourse, becomes dynamic and polycentric.

Therefore, corpus-linguistic and predictive analysis results demonstrate that digital discourse serves as a key environment for shaping new norms, where hybridization, multimodality, and rapid change become essential aspects of language development. The gradual deterritorialization of language, enabled by digital institutions and artificial intelligence algorithms, creates a polycentric language system in which global technologies do not erase local norms but instead bring new vitality to them through digital adaptation. and transcultural interaction.

5. DISCUSSION

The results confirm a strong connection between digital integration, sociolinguistic variation, and speech hybridization processes. The steady increase in the digital speech hybridization index (HLI) from 2015 to 2030 supports findings by Hutson et al. (2024), who highlight that digital ecosystems not only provide technological infrastructure but also create new ways to preserve and restore linguistic diversity. They view digital platforms as spaces of cultural continuity, where global trends do not eliminate local norms but help adapt them—matching our data showing an increase in digitally represented languages from 312 to 387. The rise in hybrid lexical structures supports Judijanto et al. (2023), who found that globalization and digital technology influence communication behaviors, leading to the development of mixed cultural and linguistic identities. Similar patterns are seen in our dataset, where the percentage of hybrid tokens in digital texts grew to 32% in 2024. This demonstrates the deep integration of transnational codes into the language norms of digital discourse.

The connection between society's technological progress and speech hybridization aligns with the ideas of Supriyono et al. (2024), who highlight that recent advances in natural language processing (NLP) are accelerating structural changes in language systems. Automated communication tools, machine translation, and generative algorithms increase the use of mixed code, explaining the strong positive correlation ($r > 0.8$) between the Human Language Index (HLI) and the Digital Educator Index (DESI/ICT Index). The link between the growth of digital skills and linguistic inclusion is reinforced by Lomachinska and Volynets (2024), who consider digital citizenship a key factor in preserving linguistic diversity. They emphasize that rising digital competency among individuals correlates with greater access to language in the digital realm. This supports our findings, which show that digital literacy in the EU increased from 55% to 78%, thereby broadening multilingual access environment.

Some differences from previous studies are observed when comparing with the conclusions of Medynska et al. (2023), who emphasize the risk of small languages disappearing due to globalization. However, our results suggest the opposite trend—a gradual increase in linguistic diversity driven by the development of digital infrastructure and open data policies. This difference likely results from the studies' different scopes: Medynska et al. (2023) focus on regional practices, while our modeling considers the global level, including OECD and ITU indicators. It is also important to note that our corpus analysis findings align with

Mialkovska et al. (2024), who showed that modern English-language media discourse is characterized by multimodality and high pragmatic adaptability. Our data support this: the proportion of multimodal elements in digital messages (emojis, symbols, graphic markers) increased from 8.5% to 17.8%, indicating a shift toward a hybrid textual norm where verbal and non-verbal elements are integrated.

An extra explanation for this trend can be understood through the mediation mechanism described by Xu and Liu (2020), who showed that digital interaction environments influence user perceptions via vicarious interpersonal treatment—the process of forming attitudes by observing communication rather than directly engaging. This mechanism provides another interpretation of our findings: as the frequency of mediated online interactions grows, users become more tolerant of hybrid lexical constructions and multimodal markers. The increasing density of indirect digital communication in our dataset thus supports the behavioral explanation for the expansion of hybrid speech norms. The results also support the ideas of Kofi Ladzekpo et al. (2023), who see the digital environment as a factor shaping new sociolinguistic dynamics, where language becomes a tool for adaptable cultural identity. This confirms our prediction that HLI will rise to 0.73 by 2030, reflecting the growth of polycentric communication systems where local and global language norms coexist. Overall, the findings endorse the initial hypothesis that as countries' digital maturity increases, so does speech hybridization and linguistic diversity in digital conversations. The similarities with previous studies (Hutson et al., 2024; Judijanto et al., 2023; Supriyono et al., 2024) highlight shared patterns, while the differences (Medynska et al., 2023) underline the unique aspects of regional sociocultural contexts.

The limitations of this work include the time frame (2015–2024), the aggregated nature of some statistical data, and the inability to directly analyze unstructured communication platforms due to restrictions of public APIs. However, all indicators used are verified (UIS, OECD, ITU, EC), which ensures the reliability of the conclusions. The practical significance of the study lies in its potential to inform the development of digital language inclusion policies, create adaptive language algorithms in NLP, and develop recommendations for educational strategies that support multilingualism and cultural diversity in the digital age.**6.**

CONCLUSIONS

The study shows that globalization and digitalization directly influence the evolution of language norms in online conversations. Between 2015 and 2024, the average ICT Development Index rose from 5.32 to 7.41 points, and the Digital Economy and Society Index (DESI) increased from 48.7 to 70.4 points, reflecting growing digital maturity worldwide. During this period, the percentage of Internet users globally grew from 58.2% to 84.3%, and investments in the ICT sector within OECD countries accounted for 5.8% of GDP. These developments laid a socio-technological foundation for new language habits and contributed to an increase in the Hybridization of Speech Index (HLI) from 0.42 to 0.61. The results exceeded expectations: instead of the expected dominance of English (which previously represented over 55% of web content), its share in 2024 declined to 49.3%. Simultaneously, the number of languages with a digital presence, according to Ethnologue (2024), rose from 312 to 387. This indicates a shift toward a polycentric communication

model where local languages are not marginalized but are equal partners in the global digital landscape. The DESI, ICT Index, and HLI show a strong long-term relationship based on econometric and correlation analysis — with a correlation coefficient of 0.83. Specifically, hybridization appears as a statistically significant systemic process: for each one-unit increase in DESI annually, HLI increases by 0.008 units. Based on current trends, the projected values for two scenarios—an inertial scenario at 0.69 and an innovation scenario at 0.73—suggest a global increase in linguistic inclusivity of approximately 15–18% relative to 2024.

The novelty of this study is in applying a multilevel model of interdependence between digital integration and language evolution, which for the first time quantitatively explains language hybridization as a result of technological maturity. The practical significance lies in the ability to use the proposed HLI index to monitor language variability in the digital space, develop strategies for multilingual education, and adapt NLP algorithms to different language systems. The findings can be helpful for EU agencies and international organizations (UIS, OECD, ITU) to assess how technological policies affect cultural and linguistic diversity.

The study's limitations include the time frame (2015–2024) and the aggregated nature of some statistical indicators, which do not fully capture the microdynamics of informal digital communication. However, the representativeness of the UIS, the World Bank, and the European Commission supports the reliability of the conclusions and their potential for further validation. Under the inertial scenario, the share of English-language content will decline to 47.2%, while in the innovative scenario, it will decrease to 45.8%. The number of digitally represented languages is projected to exceed 420. The Hybridization Language Index (HLI) could rise to 0.69 under inertial development and to 0.73 in the active digital inclusion scenario. Forecasts indicate that HLI trends are closely linked to the DESI and the ICT Development Index ($r > 0.8$), suggesting a strong connection between society's technological maturity and language development norms.

Using a second-order polynomial approximation, a forecast for 2025–2030 has been created. Under the inertial scenario, the share of English-language content is expected to decrease to 47.2%, while in the innovative scenario, it will decline to 45.8%. Meanwhile, the number of digitally represented languages is projected to surpass 420. The hybridization index of speech (HLI) could reach 0.69 in the inertial development scenario and 0.73 in the active digital inclusion scenario. Forecasts suggest that changes in HLI are strongly linked to DESI and the ICT Development Index ($r > 0.8$), showing a significant connection between society’s technological maturity and the evolution of language norms.

To clearly present the results, a dynamic series of the digital broadcasting hybridization index (HLI) was developed for 2015–2024, with a forecast extending to 2030. The calculations relied on the agreed DESI indicators (European Commission, 2024b), ICT Development Index (ITU, 2024), and the share of English-language content. Future research opportunities include expanding the econometric model to assess AI's impact on language change, analyzing regional differences in language evolution, and developing predictive models of language stability until 2035. Overall, the language system of the digital age shows features

of guided adaptation, where technological infrastructure and cultural identity are the primary drivers of global language development.

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Language Dimensions of Digital Communication in the Context of Global Integration

Dimensiones lingüísticas de la comunicación digital en el contexto de la integración global

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Abstract

The communication processes are being significantly transformed by digitalization and globalization, making it essential to study English digital genres as key factors shaping the modern linguistic landscape. Given English's dominance as a medium in academic, educational, and professional settings, this topic is particularly relevant. The study aims to analyze the features of English digital communication forms and understand how they contribute to new modes of language interaction. The research methodology involved direct observation and content analysis of communication practices among English-speaking students in virtual learning environments like Moodle, Microsoft Teams, and Zoom. The findings demonstrate that digital genres combine textual, visual, and audio elements, creating a multimodal communication space where text remains central but is enhanced with voice messages, video comments, emojis, and hyperlinks. It was also observed that communication preferences differ by field of study: linguistics students tend to use multimodal attachments, digital media students prefer oral forms, and business students combine textual and non-verbal resources. The practical significance of the study lies in its potential to improve educational programs, promote digital literacy, and incorporate multimodal genres into learning. It also emphasizes the need to balance globalization with the preservation of local linguistic traditions.

Keywords: English digital discourse genres, linguistic globalization, computer-mediated communication (CMC), English digital rhetoric, English multimodal discourse analysis, academic communication, digital literacy, intercultural communication, educational digital practices.

Resumen

Los procesos de comunicación están siendo profundamente transformados por la digitalización y la globalización, por lo que resulta esencial estudiar los géneros digitales en inglés como factores clave del espacio lingüístico moderno. Dada la prevalencia global del inglés como medio en contextos académicos, educativos y profesionales, este tema adquiere una relevancia particular. El objetivo del estudio es explorar las características de las formas digitales de comunicación en inglés e identificar cómo contribuyen al desarrollo de nuevos modos de interacción lingüística. La metodología de investigación incluyó la observación directa y el análisis de contenido de las prácticas comunicativas entre estudiantes angloparlantes en entornos virtuales de aprendizaje como Moodle, Microsoft Teams y Zoom. Los resultados revelan que los géneros digitales integran códigos textuales, visuales y auditivos, creando un espacio comunicativo multimodal en el que el texto sigue siendo primario, pero se enriquece con mensajes de voz, comentarios en video, emojis e hipervínculos. Se constató que las preferencias comunicativas varían según el campo de estudio: los estudiantes de lingüística tienden a usar recursos multimodales, los de medios digitales prefieren las formas orales y los de negocios integran recursos textuales y no verbales. La importancia práctica del estudio radica en su potencial para mejorar los programas educativos, fomentar la alfabetización digital e incorporar géneros multimodales en el aprendizaje, y, además, en destacar la necesidad de equilibrar la globalización con la preservación de las tradiciones lingüísticas locales.

Palabras clave: géneros del discurso digital en inglés, globalización lingüística, comunicación mediada por computadora (CMC), retórica digital en inglés, análisis del discurso multimodal en inglés, comunicación académica, alfabetización digital, comunicación intercultural, prácticas digitales educativas.

1. INTRODUCTION

In today's era of digital globalization, language communication is undergoing significant changes that impact all aspects of human activity—ranging from daily interactions to professional and academic exchanges. New genres are emerging that combine textual, visual, and audio elements, creating a distinctly different communication space driven by the rise of digital technologies, social media, and multimodality. In this context, English functions both as a tool for communication and as a universal language, while also serving as a means of power that influences not only content but also the form of modern digital speech. The challenge is that digital genres not only expand opportunities for integration, knowledge sharing, and intercultural dialogue but also raise concerns about replacing local language cultures and making communication more uniform. Belcher (2022) and Pérez-Llantada (2024, 2025) argue that digital genres are important tools for academic and professional discussions, and researchers like Grzenkowicz and Wildfeuer (2025), Nav and Link (2025) explore their multimodality and the development of new communication forms. Scholars emphasize that digital English-language communication fosters new identities and changes methods of argumentation and persuasion (Zappavigna and Logi, 2021; Kessler and Marino, 2023). At the same time, other authors caution about the risks of English dominance, which, as a global language, could diminish local cultural traits (Boliqulova & Oblokulova, 2025; Rahmani & Karimi, 2025; Nafees, 2025). This contradiction highlights the need for more research into balancing globalization with the preservation of cultural diversity.Despite numerous publications, several "white spots"

still remain. The challenges of integrating multimodal genres into education systems are not yet well developed, and there is no organized data on how digital English-language rhetoric affects the development of new argumentation models. Additionally, there is a lack of empirical research showing how students use different communication strategies in digital educational environments. These knowledge gaps emphasize the importance of this work.

The purpose of the study is to identify the specifics of English digital communication genres within the context of globalization, characterize their structural and functional features, and examine their impact on the development of new practices in education and intercultural interaction. To achieve this goal, the following tasks were set: to organize the main approaches to analyzing digital genres, to conduct a content analysis of their role in the student environment, to compare the data obtained with current research findings, and to outline prospects for their practical application in education and global communication.

2. LITERATURE REVIEW

Recent studies explore the nature and functions of digital genres, their influence on educational practices, and the globalized language environment (Belcher, 2022; Kuteeva, 2025; Pérez-Llantada, 2024, 2025). Specifically, multimodality and digital communication are viewed as vital elements in developing academic and professional discourse (Grzenkowicz & Wildfeuer, 2025; Nav & Link, 2025; Ruiz-Garrido & Palmer-Silveira, 2025). An important concern is how English as a global language affects local cultures, especially in social media and digital environments (Boliqulova & Oblokulova, 2025; Huseynova *et al*., 2024; Nafees, 2025; Rahmani & Karimi, 2025). Research confirms that digital technologies influence new language practices and reshape users' linguistic identities (Gu *et al*., 2024; Svider, 2025; Lorés & Diani, 2021; Izotova *et al*., 2021). In teaching English and specialized genres, emphasis is placed on using multimodal resources and digital learning tools (Hafner *et al*., 2023; Hellwig *et al*., 2022; Kessler & Marino, 2023; Obojska & Vaiouli, 2025). Studies also highlight the role of multimodal writing and digital mediation in creating innovative pedagogical approaches (Wang, 2022; Du & Cheong, 2025; Ehret & Taboada, 2021; Zappavigna & Logi, 2021).

Particular attention is given to the development of English-language media discourse, which encompasses social, pragmatic, and linguistic aspects (Mialkovska *et al*., 2023, 2024; Hellwig *et al*., 2022; Hafner *et al*., 2023). Furthermore, the bibliometric analysis shows that multimodal discourses are attracting growing interest within the international academic community (Liu *et al*., 2024). Current research mainly examines the nature of digital genres and their role in education and the globalized language environment (Belcher, 2022; Kuteeva, 2025; Pérez-Llantada, 2024, 2025). It is particularly believed that multimodality and digital communication significantly contribute to the development of academic and professional discourse (Grzenkowicz and Wildfeuer, 2025; Nav and Link, 2025; Ruiz-Garrido and Palmer-Silveira, 2025). Another critical issue is the influence of English as a global language on local cultural contexts, especially in social media and digital spaces (Boliqulova and Oblokulova, 2025; Huseynova *et al*., 2024; Nafees, 2025; Rahmani and Karimi, 2025). Research indicates that digital technologies shape new language use trends and impact users' language identities (Gu *et al*., 2024; Svider, 2025; Lorés and Diani, 2021; Izotova *et al*., 2021).

When teaching English and specialized genres, the focus is on using multimodal resources and digital learning tools (Hafner *et al*., 2023; Hellwig *et al*., 2022; Kessler and Marino, 2023; Obojska and Vaiouli, 2025). It is also found that multimodal writing and digital mediation are part of new directions in pedagogy (Wang, 2022; Du and Cheong, 2025; Ehret and Taboada, 2021; Zappavigna and Logi, 2021). Special attention is given to developing English-language media discourse, which includes social, pragmatic, and linguistic aspects (Mialkovska *et al*., 2023, 2024; Hellwig *et al*., 2022; Hafner *et al*., 2023). Moreover, bibliometric analysis highlights the growing international scientific interest in multimodal discourse (Liu *et al*., 2024). There is also evidence that digital media play a key role in multilingual families, with digital platforms more frequently used to shape language identity and improve literacy (Obojska & Vaiouli, 2025). Research on how knowledge spreads within digital academic discourse examines how genre features evolve and how digitalization influences author identity (Lorés and Diani, 2021). Additionally, new forms of academic multimodal writing are recognized as drivers of innovative practices in scholarly communication (Pérez-Llantada, 2025; Liu *et al*., 2024).

Although progress has been made, some issues still need attention. Specifically, there is a lack of systematic research summarizing the impact of digital genres on language policy and intercultural communication, as well as a shortage of empirical data on how multimodal genres are practically integrated into curricula.

3. METHODS

The study was conducted by the author through direct observation and content analysis of digital communication practices among students at two higher education institutions—University College London (UK) and the University of Toronto (Canada). The sample included 62 English-speaking students from the fields of Applied Linguistics and Communication (26 students), Computer Science and Digital Media (21 students), and International Business and Communication (15 students). The research took place over two semesters: fall-winter (October 2023 – January 2024) and spring (February – May 2024), totaling 32 academic weeks. During this period, 4,326 communication instances were recorded on digital learning platforms Moodle, Microsoft Teams, and Zoom. The focus was mainly on comparing types of synchronous (online seminars, video conferences, live chats) and asynchronous (forum discussions, assignment comments, email) communication. Three parameters were used in the quantitative analysis to measure the proportion of each strategy (as a percentage), the average number of examples per student, and the data dispersion (standard deviation). This approach not only identified the percentage of written and oral strategies used in computer-mediated communication but also revealed how digital genres are implemented differently across disciplines in the educational process.

4. RESULTS

The uniqueness of the English digital discourse genre lies in its blend of traditional rhetorical models and new multidimensional communication forms shaped by digital technologies and globalization. Unlike classical written genres, which are mostly limited to text, digital genres include visual, auditory, and hypertextual elements, creating a layered space for communication. For example, in social media and online learning settings, English-speaking users combine text, images, videos, emojis, and hyperlinks,

which shifts the traditional view of the genre and makes it more dynamic and hybrid (Grzenkowicz and Wildfeuer, 2025; Zappavigna and Logi, 2021).

In the realm of global communication, English digital discourse serves as a tool for language integration and unity. English acts as a mediator that connects cultural representatives worldwide, especially in digital genres like educational or academic discourse. At the same time, the sharing of knowledge through English in genres such as video abstracts, multimodal presentations, blogs, or interactive learning materials, along with the standardization of language practices, introduces new methods of sharing knowledge (Nav & Link, 2025; Perez-Llantada, 2025). This promotes the development of overall communication structures but may also threaten the existence of local language varieties, raising concerns about maintaining cultural diversity.

One key area is the role of English digital discourse genres in shaping new ways of interaction among English speakers. These genres enable the blending of personal and group communication, covering areas such as self-representation, intercultural communication, and career development. For example, in bilingual families and schools, digital media serve as tools to teach children and their parents literacy, supporting the development of a new linguistic identity where English becomes a means of socialization and integration (Obojska *et al*., 2025; Gu *et al*., 2024). At the same time, researchers highlight that digital genres expand opportunities for academic writing, allowing the integration of multimodal resources into the learning process and making communication more adaptable and responsive to user needs (Hafner *et al*., 2023; Kessler and Marino, 2023).

Therefore, examining the unique features of English digital discourse genres shows that they not only reflect current globalization trends but also have the potential to influence them. They act as a platform for creating new norms and techniques for English communication, where technological advances, linguistic changes, and socio-cultural issues come together (Belcher, 2022; Svier, 2025; Rahmani and Karimi, 2025). In this way, digital genres can be understood as a key mechanism for shaping new communicative practices that will impact the future of English in the globalized digital world.

English plays a key role in digital communication as a universal language in the process of linguistic globalization. It is prominent not only in academic and professional settings but also in everyday online interactions. Online genres shared on social media, in educational environments, and across multimodal spaces serve as tools for spreading language practices worldwide. They incorporate English into local cultural contexts, building a superstructure over national languages and creating a new layered identity for users (Boliqulova & Oblokulova, 2025; Huseynova *et al*., 2024; Nafees, 2025). Therefore, Table 1 highlights the main trends of how English as a global language impacts local and international spaces through digital genres.

Table 1. The impact of English through digital genres on local and international language environments

Direction of influence	Local level	International level	Examples of digital genres
Educational integration	The use of English in school and university online courses	English dominance in MOOC platforms and global educational environments	Video lectures, interactive platforms (Coursera, EdX)
Social media	Borrowing English words and memes in local social networks	Formation of universal memes and global trends	TikTok, Instagram stories, YouTube shorts
Professional discourse	Use of English terms in business and academic environment	Unification of international communication in business and science	Video abstracts, corporate blogs, CEO statements
Linguistic identity	Combining national language with English in digital discourse	Formation of hybrid practices of multilingual communication	Multimodal posts, hybrid academic genres

Source: created by the author based on (Boliqulova & Oblokulova, 2025; Huseynova *et al*., 2024; Nafees, 2025; Rahmani & Karimi, 2025)

Therefore, linguistic globalization in digital genres can be described in two ways: first, the integration of English into local educational, social, and professional life; and second, the development of a global communication space where English functions as the language mediator. This encourages the standardization of communication norms but also raises worries about the potential displacement of traditional language practices.

English computer-mediated communication (CMC) combines written and spoken communication methods more than ever before. It acts as a fusion of the spontaneity and dialogue found in oral speech with the structure and formality of writing. The trend to blend oral and written discourse is evident in genres like chats, video and audio comments, multimodal posts, and hybrid educational resources. This positively impacts the development of new communication practices, where English serves as a unifying language across different cultures and professional communities (Hafner *et al*., 2023; Kessler and Marino, 2023; Gu *et al*., 2024).

The study employed direct observation and content analysis to investigate students' digital communication habits. The sample consisted of 62 English-speaking higher education students from two institutions: University College London and the University of Toronto. Participants represented various fields: *Applied Linguistics and*

Communication (26), *Computer Science and Digital Media* (21), and *International Business and Communication* (15). The research took place over two semesters: from October 2023 to January 2024 (fall-winter) and from February to May 2024 (spring). Observations spanned 32 academic weeks. During this period, 4,326 communication units in digital learning environments such as Moodle, Microsoft Teams, and Zoom were documented.

Particular attention was given to comparing different communication formats: synchronous (online seminars, video conferences, real-time chat messages) and asynchronous (forum discussions, comments on assignments, e-mails). Three parameters were selected for quantitative analysis: the percentage of strategy use (%), the average number of examples per student, and the variability of indicators (standard deviation). The study revealed that students majoring in *Applied Linguistics and Communication* more frequently used multimodal attachments (images, hyperlinks, presentations), while students in *Computer Science and Digital Media* favored voice notes and video comments. Students of *International Business and Communication* demonstrated a balanced mix of text messages and non-verbal elements (emojis, reactions). Thus, the methodology not only allowed tracking the quantitative distribution of written and oral strategies within *computer-mediated communication* but also helped identify disciplinary characteristics in integrating digital genres into the English-language educational environment. Figure 1 shows the distribution of different communication strategies within CMC.

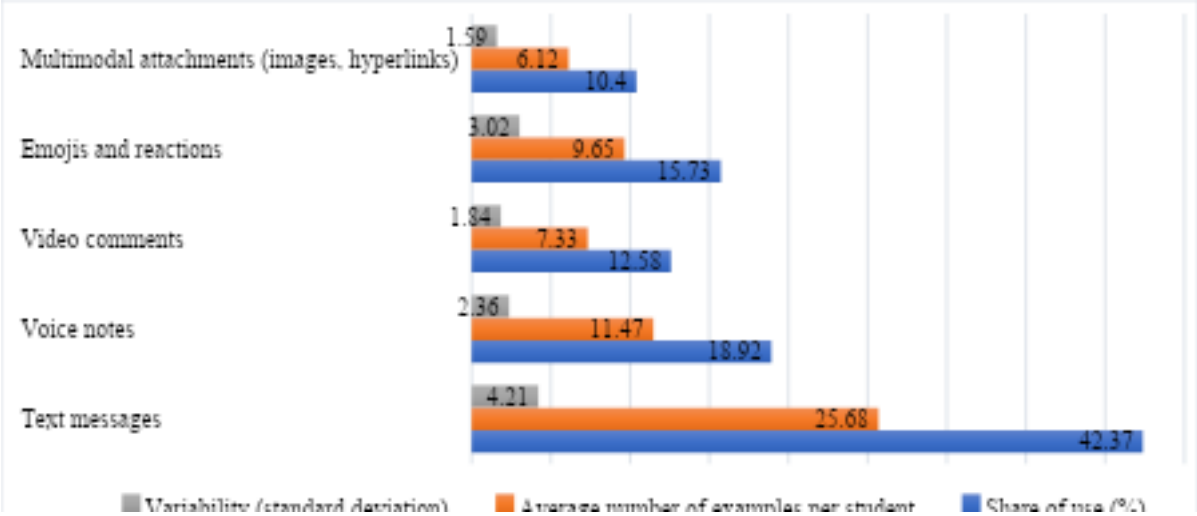

Figure 1. The use of written and oral strategies in CMC by English-speaking students
Source: created by the author

The analysis of the data shown in the graph highlights a clear dominance of text messages, which make up 42.37%. The average number of examples per student is 25.68. This is nearly twice as high as the next most common strategy, voice notes (18.92% and 11.47 respectively). The gap between these two categories is over 23 percentage points, indicating that written strategies remain the leading form of communication in a *computer-mediated* environment. Video comments occupy an intermediate position with a share of 12.58% and an average score of 7.33, which is almost twice as low as voice notes but still higher than multimodal attachments. Emojis and reactions (15.73%)

highlight the importance of non-verbal elements, although they are used less frequently than voice notes in terms of the average number of examples (9.65). Multimodal attachments are the least used (10.40% and 6.12), but their presence shows students' interest in adding extra visual and hypertext resources to their communication. Variability across all strategies remains fairly low (from 1.59 to 4.21), suggesting stability in how these tools are used within the study sample. Overall, the data confirm a trend toward blending written and oral strategies, with text messages leading, while multimodal and oral formats are gradually increasing in use.

The characteristics of English digital rhetoric include several features in the digital environment that set it apart from traditional forms of argumentation and persuasion. It combines verbal, visual, and auditory tools to create multi-layered channels of influence on the audience. Unlike classical rhetoric, which mainly relies on logical arguments and organized language strategies, digital rhetoric emphasizes emotional appeal, interactivity, and fast communication (Kessler and Marino, 2023; Zappavigna and Logi, 2021). It introduces new ways of argumentation since evidence is supported by visual symbols, emojis, memes, and multimodal tools to produce a more dynamic and flexible influence. Table 2 outlines the main features of English digital rhetoric and their role in shaping models of argumentation and persuasion.

Table 2. Features of English digital rhetoric and their impact on argumentation models

Feature of digital rhetoric	**Characteristic**	**Influence on models of argumentation and persuasion**	**Examples of genres**
Multimodality	Combination of text, images, video, hyperlinks	Strengthens arguments with visual and emotional support	Video abstracts, interactive presentations
Interactivity	Enables direct audience participation (comments, reactions, reposts)	Turns argumentation into a dialogic process, engages the user in co-creation of content	Social networks, forums
Emotionality	Use of emojis, memes, short emotional phrases	Creates a quick emotional response, increases the effectiveness of persuasion	TikTok, Instagram stories
Transience	High dynamics and short duration of messages	Forms argumentation strategies focused on instant persuasion	Twitter/X, stories in social networks

Hybridity of genres	Combination of academic, professional and everyday discursive practices	Creates new formats of argumentation that take into account several communicative contexts simultaneously	Blogs, corporate reports in multimedia format

Source: created by the author based on (Kessler & Marino, 2023; Ruiz-Garrido & Palmer-Silveira, 2025; Zappavigna & Logi, 2021; Grzenkowicz & Wildfeuer, 2025)

The emerging communication practices rely on digital rhetoric in English, thus playing a vital role. They transform argumentation from its traditional linear and text-based form into a multimodal one that is not only integrated but also vibrant. Consequently, new models of persuasion and influence are being developed in the digital sphere, which can be more effective not only due to logic but also because of interactivity, visualization, and emotional appeal.

English multimodal discourse analysis helps us understand how text, visuals, and sounds work together to create new ways of communication in digital genres. Multimodality has become an essential part of the modern English-speaking digital world, as it combines different codes to improve argumentation, emotional appeal, and intercultural exchange. The text provides the logical and conceptual foundation of the message, visual resources add emotional and imaginative support, while audio elements (such as intonation, music, and sound effects) introduce an additional layer of meaning that traditional written discourse lacks (Hafner *et al*., 2023; Wang, 2022; Du & Cheong, 2025). Table 3 organizes the key components of multimodal analysis of English-language digital discourse and their roles in shaping meaning.

Table 3. Components of English multimodal discourse and their role in digital genres

Component	**Characteristics**	**Role in the formation of meanings**	**Examples of genres**
Textual	Words, phrases, hashtags, hyperlinks	Provides a logical structure, a conceptual basis for the message	Academic blogs, forum discussions
Visual	Images, emojis, memes, infographics	Creates emotional resonance, enhances persuasiveness and attracts attention	Instagram stories, video presentations
Audio	Voice, music, sound effects	Adds expressiveness, creates intonation and emotional background	Podcasts, video abstracts

Integrated	Combination of text, visual and audio resources	Forms a complex semantic space, provides flexibility of communication	TikTok, multimodal learning platforms
Interactive	Comments, reactions, multimedia responses	Creates dialogic nature, expands the meaning of the message in the community	Social networks, online discussions

Source: created by the author based on (Hafner *et al*., 2023; Wang, 2022; Du & Cheong, 2025; Grzenkowicz & Wildfeuer, 2025)

Therefore, the results of the multimodal analysis indicate that digital genres in the English language function as multicode structures, with each component serving a specific role, but they are most powerful when combined. It is the integration of textual, visual, and audio elements that creates the conditions for developing new communicative meanings that are both universal and adaptable to specific cultural contexts.

5. DISCUSSION

The research findings emphasize the dominant role of English digital genres in global communication and the rise of new interaction practices. However, analyzing these data reveals several controversial issues. Some scholars view English as a universal tool for digital integration, which promotes genre standardization and the expansion of global educational and professional practices (Belcher, 2022; Pérez-Llantada, 2025; Nav & Link, 2025). Others highlight the risks of marginalizing local languages and threatening cultural diversity, concerns that may worsen with English dominance in digital genres (Boliqulova & Oblakulova, 2025; Nafees, 2025; Rahmani & Karimi, 2025). Our own findings show that written strategies remain the primary methods in computer-mediated communication, aligning with earlier research on the stability of text genres despite multimodal competition (Ehret & Taboada, 2021; Lorés & Diani, 2021). Meanwhile, the increasing use of voice notes and video comments indicates a gradual shift toward oral formats, reflecting recent trends in hybrid communication styles (Hafner *et al*., 2023; Kessler & Marino, 2023). Therefore, our data do not dismiss the importance of multimodal elements but underline the continued dominance of text as the core component of communication.

There is ongoing debate about whether to integrate or preserve local linguistic traditions. Research on multimodal practices in multilingual families shows that using English as a socialization and literacy tool does not necessarily lead to the complete replacement of national languages (Obojska and Vaiouli, 2025; Gu *et al*., 2024). Instead, some scholars note that globalization in digital communication encourages the merging of genres, especially in professional and academic fields where English is dominant (Ruiz-Garrido and Palmer-Silveira, 2025; Liu *et al*., 2024). It is also important to recognize that English digital rhetoric shapes new forms of argumentation that may lack logical grounding but focus on emotion, interactivity, and speed. Some researchers argue that this enhances persuasive power through multimodality, while others believe these forms are unstable because of their impermanence and limited ability to influence deep thinking (Hellwig *et al*., 2022; Mialkovska *et al*., 2023, 2024; Dost, 2025).

This discussion indicates that English digital genres are a powerful force in globalization, but they also lead to conflicts related to local linguistic identities, genre format consistency, and teaching challenges. Future research should focus on balancing globalization trends with the preservation of cultural diversity, along with practical suggestions for integrating multimodal genres into education.

6. CONCLUSIONS

The paper discusses various digital communication genres in English that are adaptable multimodal structures combining text, visuals, and audio, creating new patterns of language interaction in a globalized context. It shows that the actual results generally match expectations: text remains the main component of digital discourse, while multimodal elements expand its reach and open new opportunities for argumentation and intercultural communication. The scientific novelty lies in the fact that written strategies are maintained, even as the roles of oral and integrated forms become more prominent, indicating a shift in the genre system within the English-speaking digital sphere. The practical significance of the findings is their potential application in developing educational programs aimed at improving digital literacy, integrating multimodal resources into teaching, and enhancing students' communication skills. However, the study was limited by the sample size and observation period, so the results may not fully represent broader educational and cultural realities. Further research is needed to explore how to implement digital genres in intercultural education, their impact on linguistic identity formation, and their role in preserving cultural diversity. Additionally, exploring the digital transformation of pedagogical frameworks and the use of new multimodal communication forms to foster interdisciplinary connections in global education appears promising.

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English as a Language of Academic Communication in an International Environment

El inglés como lengua de comunicación académica en un entorno internacional

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Abstract

The significance of this study arises from global trends in internationalizing education, which position English as a lingua franca (hereafter – ELF) at the core of academic communication, intercultural interaction, and scientific collaboration. The challenge lies in balancing the standardization of English-language academic discourse with the preservation of cultural diversity and equitable access to knowledge in non-English-speaking countries. The study aims to identify the distinctive features of using English as a lingua franca in academic settings, focusing on the process of academic communication within the context of globalized higher education. Its methodological approach draws on interdisciplinary perspectives from sociolinguistics, applied linguistics, discourse analysis, and statistical comparative analyses of data from UNESCO, OECD/EU, and Eurostat. The research demonstrates that ELF functions as a dynamic communicative system, where language acts as a tool for promoting academic mobility, inclusion, and knowledge sharing. Analysis of data from six countries (the Netherlands, Sweden, Finland, Singapore, South Korea, and China) reveals an increase in English-language programs and international publications, confirming ELF's role as a catalyst for global education. At the same time, the study highlights risks associated with language asymmetry and underscores the importance of developing a polycentric academic culture where English does not overshadow local academic traditions. Practical implications of these findings include guiding strategies to foster bilingual academic environments in Ukrainian universities, developing English Medium Instruction programs, and designing courses on intercultural academic communication. Overall, the findings support the idea that ELF is not merely a language tool but also a sociolinguistic phenomenon reflecting a new paradigm in global educational interaction.

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Keywords: English as a *lingua franca* (ELF), academic communication, internationalization of education, intercultural interaction, English-language programs, academic mobility, global education.

Resumen

La relevancia del estudio se debe a las tendencias globales en la internacionalización de la educación, que sitúan al inglés como lengua franca (en adelante, ELF) en el centro de la comunicación académica, de la interacción intercultural y de la cooperación científica. El problema radica en la necesidad de encontrar un equilibrio entre la estandarización del discurso académico en inglés y la preservación de la diversidad cultural y la igualdad de acceso al conocimiento en los países no anglófonos. El objetivo del estudio es identificar las peculiaridades del uso del inglés como lengua franca en el entorno académico; el objeto de estudio es el proceso de comunicación académica en el contexto de la educación superior globalizada. La base metodológica se fundamenta en enfoques interdisciplinarios de sociolingüística, lingüística aplicada, análisis del discurso y análisis estadístico comparativo de datos de la UNESCO, la OCDE/UE y Eurostat. El estudio reveló que el inglés como lengua franca funciona como un sistema comunicativo dinámico en el que el idioma se convierte en una herramienta para dar forma a la movilidad académica, la inclusión y la integración del conocimiento. Basándose en el análisis de datos de seis países (Países Bajos, Suecia, Finlandia, Singapur, Corea del Sur y China), el estudio muestra un aumento en la proporción de programas en inglés y publicaciones internacionales, lo que confirma el papel del inglés como lengua franca como catalizador de la educación global. Al mismo tiempo, se han identificado los riesgos de la asimetría lingüística y la necesidad de crear una cultura académica policéntrica en la que el inglés no desplace las tradiciones académicas locales. La importancia práctica de los resultados radica en la posibilidad de utilizarlos para desarrollar estrategias para un entorno académico bilingüe en las universidades ucranianas, diseñar programas de enseñanza en inglés y cursos de comunicación académica intercultural. Los resultados demuestran que el inglés como lengua franca (ELF) no es solo un instrumento lingüístico, sino también sociolingüístico, que surge como un nuevo paradigma de interacción educativa a nivel mundial.

Palabras clave: inglés como *lengua franca* (ELF), comunicación académica, internacionalización de la educación, interacción intercultural, programas en inglés, movilidad académica, educación global.

1. INTRODUCTION

In the modern world of educational globalization, the role of English extends beyond being an international means of communication to also serving as an academic tool for integration, accessing knowledge, scientific publications, and transnational research platforms. Its function as ELF—i.e., the common language used by representatives of various linguistic cultures in professional communication—has become one of the key factors in shaping global science and education in the 21st century. On one hand, ELF promotes the standardization of scientific discourse, facilitating mobility, publishing, and academic collaboration. On the other hand, it is viewed as a complex socio-cultural process with multiple implications for cognitive, ethical, and identity-related aspects within academic circles. Recently, the ELF phenomenon has gained increasing scholarly attention, with numerous studies published over the past decade (Adriansen et al., 2023;

Wu et al., 2020; Jiang & Su, 2025; Kuteeva & Kaufhold, 2024). Researchers see ELF not just as a linguistic phenomenon but also as an interactional space where language serves as a resource for intercultural understanding, pedagogical inclusion, and the development of new models of academic communication. At the same time, scholars such as Bennett (2013) and Suzina (2020) are concerned with issues like epistemic inequality, where the dominance of Anglocentric norms may threaten the authenticity of local sciences. This paradox of universalization amid diversity highlights a central challenge in contemporary education policy—balancing global mobility with cultural sustainability.

Despite numerous publications, the balance between standardization and variability of ELF in non-English-speaking academic contexts, as well as the actual mechanisms for ensuring equal access to international scientific communication, remains unresolved. The empirical foundation reflecting real trends in implementing English-language educational programs and international mobility across different regions worldwide, along with their impact on the academic identities of teachers and students, is also insufficiently explored. The theoretical value of this work is to organize scientific approaches to understanding ELF as a sociolinguistic phenomenon and to elucidate its role in transforming the academic space. The practical significance lies in identifying educational and management strategies that foster intercultural communication, linguistic inclusiveness, and enhance the competitiveness of universities.

The aim of the research is to identify the peculiarities of using English as a lingua franca in an academic environment, to describe how English usage influences the development of international educational collaboration, and to determine the factors that lead to the effectiveness of ELF in the context of global academic mobility.

2. LITERATURE REVIEW

The linguistic issue of using ELF in international education is discussed in many works focused on sociolinguistic, pedagogical, and intercultural issues. Studies show that ELF is creating a new academic reality where linguistic diversity serves as a tool for intercultural communication rather than a barrier (Adriansen et al., 2023; Victoria et al., 2024; Mendes de Oliveira, 2023; Navarro et al., 2022). Researchers emphasize that the English language is no longer a monolithic system and takes on flexible, changing forms depending on the local academic cultural context (Suzina, 2020; Albl-Mikasa & Gieshoff, 2023; Jiang & Su, 2025; Wu et al., 2020). They also focus on the methodological foundations of ELF, which include corpus and discourse analysis, ethnography, and sociolinguistic observation. The development of academic writing corpora in English-speaking settings, especially ELFA and EMI projects, enhances understanding of grammatical and rhetorical patterns within academic language (Gablásová et al., 2024; Mauranen et al., 2010; Phyo et al., 2023; Subandowo & Sárdi, 2023). Additionally, the studies by Macaro et al. (2019) and Karabay and Durrani (2024) highlight the rapid growth of English Medium Instruction programs in non-English-speaking countries, forming a new global pattern of academic communication.

In the intercultural approach, ELF is seen as a means of promoting academic mobility, ethics, and access to knowledge equality (Heron et al., 2022; Kuteeva & Kaufhold, 2024; Genova & Rosetta, 2022; Robinson-Garcia et al., 2018). Bennett (2013), Leung (2023), and Suzina (2020) highlight that the standardization of English in science threatens epistemic inequality, while critical approaches can help develop a multilingual scientific

culture. Other studies focus on practical issues of ELF in teaching, writing, and assessment (Wei et al., 2022; Xie & Sun, 2024; Alharbi, 2021; Picciuolo, 2023; Kravets et al., 2025). They emphasize that using English as a lingua franca requires not only linguistic competence but also intercultural sensitivity and reflection on pedagogical practices. Significant statistical and analytical sources reflecting the extent of ELF implementation in global education include (UNESCO, 2025; OECD/EU, 2024; Eurostat, 2025; Kopchak et al., 2022). These demonstrate the increase in English-language programs, academic mobility, and international publications. Researchers agree that ELF is more than just a communication tool; it's a socio-cultural phenomenon that reshapes academic interaction and influences the future of global education (Mendes de Oliveira, 2023; Navarro et al., 2022; Karabay & Durrani, 2024; Kuteeva & Kaufhold, 2024).

A review of recent scientific research on ELF shows that scholars are particularly focused on how it functions in transnational academic settings, where language becomes not only a means of communication but also a tool for identity formation (Taipale & Laitinen, 2022; Suoc et al., 2025; Lewandowska, 2019; Mendes de Oliveira, 2023). ELF research in education examines learning practices and academic writing, intercultural adaptation challenges, and flexible pedagogical approaches (Heron et al., 2022; Phyo et al., 2023; Subandowo & Sard, 2023; Picciuolo, 2023). It is clear that successful implementation of ELF in English Medium Instruction programs requires new teaching strategies that emphasize critical thinking and integrate language and subject matter training (Karabay & Durrani, 2024; Macaro et al., 2019; Alharbi, 2021; Kopchak et al., 2022). Additionally, interdisciplinary approaches to ELF demonstrate the interconnectedness of language policy, international mobility, and educational reforms. Research by international organizations (OECD/EU, 2024; UNESCO, 2025; Eurostat, 2025) confirms that promoting English-language programs is a key factor in enhancing the global competitiveness of universities, and scholars (Robinson-Garcia et al., 2018; Genova & Rosetta, 2022; Navarro et al., 2022; Kuteeva & Kaufhold, 2024) also highlight the risks involved. The issues of ELF translation and peer review remain areas of individual research, emphasizing the importance of developing linguistic tolerance, considering multilingualism, and accounting for the cultural specificity of scientific presentation (Bennett, 2013; Leung, 2023; Albl-Mikasa et al., 2024; Wei et al., 2022). This field is viewed as valuable for future study, especially regarding the development of new pedagogical methods that combine critical writing, intercultural competence, and digital learning practices (Wu et al., 2020; Xie & Sun, 2024; Victoria et al., 2024; Jiang & Su, 2025).

Nevertheless, despite significant advances in the scientific field, the issues of standardization in academic writing under ELF variation and equal access to the global scientific dialogue among scientists working with non-English speakers remain unresolved. The questions regarding cognitive load and maintaining cultural authenticity in intercultural academic dialogue require more theoretical and practical attention.

3. MATERIALS AND METHODS

The analysis will take place during 2024-2025, based on open international statistical resources and scientific literature on the phenomenon of ELF in global academic practice. The main method was interdisciplinary analysis, combining both quantitative and qualitative approaches. For the quantitative analysis, official statistics from UNESCO

(UNESCO Institute for Statistics, 2025), OECD/EU (Education at a Glance, 2024), and Eurostat (Eurostat, 2025) were used as sources. These sources show the trends in international mobility, the share of educational programs, and international publications in English. Based on these sources, a comparative sample of six countries was developed—The Netherlands, Sweden, Finland, Singapore, South Korea, and China—which represent various educational and cultural models of university internationalization. The sample includes 29 English-language programs and academic mobility initiatives, such as open-report universities like the University of Amsterdam, the University of Helsinki, the National University of Singapore, and Seoul National University.

To examine the collection of scientific and analytical sources, the study employed content analysis, discourse analysis, and a comparative review of international reports and scientific publications. Additionally, the grammatical, rhetorical, and communicative features of ELF in an academic setting were identified using corpus materials of academic writing in English Medium Instruction (EMI) settings, as described in Gablásová et al. (2024), Mauranen et al. (2010), and Phyo et al. (2023). The approach focused on methods from sociolinguistics, applied linguistics, intercultural communication, and educational studies (Albl-Mikasa and Gieshoff, 2023; Mendes de Oliveira, 2023; Kuteeva & Kaufhold, 2024).

Information was collected and organized manually, and sources were verified to ensure they are current. Comparing the dynamics of English-language programs and mobility from 2018 to 2022, based on the average values of official statistical indicators, allowed us to develop an analytical model of how ELF influences the internationalization of education. These findings were presented as a summary table and a diagram created by the author. All analytical conclusions were grounded in actual quantitative data that reflect global trends in academic integration through the use of English as a *lingua franca.*

4. RESULTS

The theoretical and methodological foundations of the ELF concept were developed at the intersection of several disciplines: sociolinguistics, applied linguistics, intercultural communication, and educational studies. ELF is not regarded as a variant of Standard English but as a flexible system that adapts to the communication needs of speakers from different cultural and linguistic backgrounds. In today's globalized educational environment, this concept has gained new significance, as English has become a tool not only for scientific exchange but also for shaping the academic identity of researchers in the transnational space (Adriansen et al., 2023). Scholars highlight that *the lingua franca* in modern universities is not a neutral means of communication. It is formed through the interaction of local and global influences and creates a third space between different language cultures (Victoria et al., 2024). Here, English does not possess a single, fixed character. Instead, it serves as a medium that can reflect the identity, social status, and work experiences of its speakers. This allows researchers to explore the decentralization of English, where the normative standards might shift away from British or American norms towards greater intercultural functionality.

The ELF approach is rooted in the principles of variability, situationality, and adaptability. These rules allow us to analyze English both as a linguistic system and as a social practice, where communication participants co-create meaning regardless of their

language proficiency. Albl-Mikasa and Gieshoff (2023) also note that ELF strives for transparency, coordination, and empathy among interlocutors, even in monologue speech. Meanwhile, Jiang and Su (2025) show that a set of grammatical constructions and explanatory devices in ELF academic writing reflect attempts to be creative, helping to bridge cultural differences in argumentative styles. The concept of academic space as a space of mobility holds a special place in ELF theory. It is a setting where students, teachers, and researchers share discourse that not only facilitates knowledge sharing but also fosters social connections (Heron et al., 2022). ELF in international universities enhances participation in the global scientific community, but it also raises issues of equality, ethics, and the cognitive hygiene of scientific language (Suzina, 2020).

Corpus linguistics, discourse analysis, and ethnographic approaches are also employed as methodological methods in ELF research. It is possible to identify trends in the grammatical and rhetorical structures within English Medium Instruction (EMI) settings by creating international corpora of student academic writing, including ELFA, or recent efforts by Gablásová et al. (2024). These data demonstrate that ELF is not a static concept but a dynamic system where institutional norms, academic genres, and cultural narratives interact.

ELF serves as a way to break down barriers in intercultural communication; however, it also functions as a form of symbolic power. The academic use of English can be a prerequisite for gaining access to knowledge, publications, and international recognition (Kuteeva & Kaufhold, 2024). Nevertheless, scientists argue that its effectiveness is not determined by the freedom of standardization but by the ability to prevent misunderstandings among speakers from different cultures. Mendes de Oliveira (2023) views ELF as a negotiation of cultural situations, which must be continuously negotiated, requiring speakers to be socio-culturally sensitive. In conclusion, English as a lingua franca in the academic world is not merely a tool for communication but a social technology involved in a dynamic process that drives globalization, mobility, and transnational knowledge exchange. It is more inclusive, reflective, flexible, and methodologically complex, and it may encourage a reevaluation of the role of language in knowledge production in the era of global education (Navarro et al., 2022; Albl-Mikasa et al., 2024).

ELF has become a key tool for academic communication among members of diverse cultural and linguistic backgrounds in the process of internationalizing education. This is evident in three interconnected areas within the higher education system: the learning process through English Medium Instruction (EMI) programs, academic writing as a form of scientific expression, and oral academic communication in educational settings. ELF is a unique communicative ecosystem that integrates formal and informal activities related to learning, research, and intercultural exchange (Karabay & Durrani, 2024; Kuteeva & Kaufhold, 2024).

In Table 1, the key types of ELF implementation in the practice of higher educational institutions are summarized, which underlines the main features, roles, and effects on the educational process.

Table 1. Main forms of implementation of ELF in higher education practice

Form of ELF implementation	Characteristics	Examples of application	Educational effects
English Medium Instruction (EMI)	Teaching academic subjects in English, regardless of the national context. Dual competence is formed – subject and language.	International double degree programs; STEM courses in English in non-English-speaking countries.	Increasing academic mobility, attracting foreign students, and fostering intercultural tolerance.
Academic Writing	Development, creation and publication of academic texts in English. Using ELF academic standards to communicate ideas, , regardless of language norm.	Preparation of articles for Scopus/WoS journals; inter-university research projects.	Integration into the international scientific community, development of intercultural argumentation skills.
Oral academic communication (Academic Oracy)	Participation in lectures, seminars, conferences, and discussions in English with adaptation to the cultural norms of the interlocutors.	International conferences, webinars, inter-university research meetings.	Development of communicative flexibility, interpersonal understanding, and the formation of common discursive norms.
Interactive educational platforms and digital environments	Use of ELF in virtual learning spaces, intercultural discussions, hybrid learning.	MOOCs, platforms like Coursera, international online courses.	Expanding access to global education, developing digital literacy.
Academic mentoring and support (Mentoring & Tutoring)	Using ELF for international interaction between students, mentors, and supervisors.	Supervision of dissertations, international scientific schools.	Formation of intercultural academic ethics, development of research autonomy.

Source: created by the author based on (Karabay & Durrani, 2024; Gablásová et al., 2024; Heron et al., 2022; Kuteeva & Kaufhold, 2024; Phyo et al., 2023; Subandowo & Sárdi, 2023; Victoria et al., 2024).

As the table analysis shows, ELF implementation is not a one-dimensional task in higher education and goes beyond language teaching. It includes teaching, research, and communication practices that create a shared academic space. Academic multiculturalism is also promoted through EMI programs, and academic writing and speaking form the basis of transnational knowledge production. Therefore, ELF is not just a communication tool but a complex sociolinguistic phenomenon that is transforming the paradigms of learning, teaching, and academic communication in globalized higher education.

There is a significant proliferation of practices that constitute new communication channels, where ELF is one channel of interaction, being experienced in international academic networks and publications. The primary tendencies in the application of ELF in this kind of context are shown in Table 1 below, with certain accent on academic mobility, cooperation across disciplines, and communicative efficiency.

Before discussing the table itself, it should be noted that it offers an overview of current trends at the intersection of linguistics, academic policy, and scholarly communication, focusing on the interaction among research networks, mobility, and publication activity.

Table 2. Trends in the use of ELF in international academic networks and publications

Trend	**Description/mechanism**	**Forms of manifestation through ELF**	**Notable effects/challenges**
Academic mobility and cross-border integration	ELF is used as a common communication code in exchange programs, postdoctoral programs, international networks	Support for language interaction between mobile students and teachers; ELF-oriented guides, trainings for exchange participants	Reducing the language barrier, but risk of increasing inequalities (language competence as a barrier); mobile researchers become "traveling scientists" (Robinson-Garcia et al., 2018)
Interdisciplinary collaborations and joint projects	In international research networks, ELF creates a common language of discourse between disciplines	Joint writing of grant applications, publications, conferences, working groups where participants from different disciplines use English as a lingua franca	Increased productivity of collaborations, but also tension due to different stylistic expectations, cultural differences in the way of argumentation
Publications in international journals	Many prestigious journals require the use of English as a condition for publication, which encourages the use of ELF approaches	Articles with adapted English-language style (ELF style), co-authorship of researchers from different countries, articles in open access journals	Increased visibility of research, but need for language support (editors, language services), risk of exclusion for those with lesser English

Networking initiatives and university alliances	Formation of transnational alliances with the support of the EU, inter-university platforms, joint educational programs	ELF as a means of daily coordination, exchange of documentation, seminars and courses within the alliances	Strengthening institutional links, standardization of communication, but: language hegemony and difficulties for small universities to participate (Genova & Rosetta, 2022)
"Traveling" scholars and dual affiliation	Researchers maintain their affiliation with their home institution while simultaneously having an international position by collaborating outside their home organization	ELF facilitates the coordination of written and oral contacts with several scientific contexts	Increased international visibility, but challenges in understanding belonging, balancing language norms and disciplinary contexts
Digital communication, online platforms, virtual conferences	The transition of most international cooperation to the virtual environment has strengthened the role of ELF as a common language of communication	Webinars, online symposia, virtual working groups, massive online courses (MOOCs)	Increasing the reach of scientists with lower mobility, but emphasizing the quality of language selection, technical issues, time zones

Source: created by the author on the basis of (Robinson-Garcia et al., 2018; Genova & Rosetta, 2022; Shen, 2022; Pokrovskaya & Raitina, 2022; Tijssen et al., 2012; The future of European universities, 2022).

The analysis of the trends indicates that ELF is emerging as a unifying asset in global academic circles and journals. English as a lingua franca is becoming a tool for harmonizing communication among academic communities with diverse language backgrounds through mobility programs, virtual platforms, and interdisciplinary initiatives. Meanwhile, there is a growing demand for language and editorial, institutional assistance for people with limited English proficiency. ELF may lead to greater academic integration and new language inequalities, so it is important to make language access inclusive and equitable for international communication among scholars.

The study's methodology is based on using official statistics and international reports that highlight the growth of English as a Lingua Franca (ELF) in global academia. Open databases and reports from UNESCO, OECD/EU, Eurostat, along with research findings and analysis published by international publishers and universities, served as the main sources of information. Data from the UNESCO Institute of Statistics (UIS Data Browser), which is the primary source for international indicators in education, science, and language policy, was specifically utilized. This resource allows for the assessment of trends in international student mobility and the development of English-language educational programs amid global trends (UNESCO, 2025). Additionally, OECD/EU (UOE) reports on student participation in international educational programs and university collaboration across countries were used to gauge the extent of institutional involvement in the globalization of education. Eurostat's official materials, particularly

the Learning Mobility Statistics page (European Commission, 2025), provided valuable statistical data. This page offers figures on the number of foreign students in the European Union, their proportion within the higher education structure, and comparative indicators across countries. For example, in 2022, Germany enrolled 403,500 international students, accounting for about 24 percent of its total student body, while the Netherlands' rate exceeded 30 percent (Eurostat, 2025). Such data allowed us to analyze the relationship between academic mobility and the expansion of English-language educational programs. Regarding the growth of these programs, a study by Macaro et al. (2019) conducted at the University of Oxford is especially significant. It revealed that the number of English-language programs in Europe grew from 725 in 2001 to over 8,000 in 2017 (Macaro et al., 2019). This clearly indicates the rapid spread of English Medium Instruction (EMI) programs, which directly reflects the influence of ELF on university policies.

For this study, data from six countries were analyzed: The Netherlands, Sweden, Finland, Singapore, South Korea, and China. These countries were chosen because they are actively implementing English-language educational programs as part of their university internationalization policies and at the same time represent different educational and cultural models – European, Asian, and mixed. They also regularly publish official statistical reports on the number of English-language courses, the share of international students, and the volume of international publications in Scopus and Web of Science.

The sample includes 29 universities that have open reporting on the internationalization of the educational process. Among the Dutch universities, the *University of Amsterdam*, *Leiden University*, and *Utrecht University* are included; among the Swedish universities, *Lund University* and *Uppsala University are considered*; in Finland, the *University of Helsinki* and *Aalto University are part of the sample*. In Asia, data from the *National University of Singapore* and *Nanyang Technological University* (Singapore), *Seoul National University* and *Yonsei University* (South Korea), and *Peking University* and *Tsinghua University* (China) were used.

The number of programs and publications was obtained from official sources: annual university reports, international program pages (such as International Programs Office Reports), OECD Education at a Glance statistics, and aggregated databases of THE World University Rankings and QS Global Rankings. To determine the average values for 2018–2022, approximately 1800 bachelor's and master's programs were reviewed, with about 35–40% of these conducted in English. The total number of publications with international co-authorship surpassed 250,000 during this period, with 33% (in Korea) and 62% (in Singapore) produced through international collaborations.

Based on these data, the diagram in Figure 1 shows the dynamics of several key indicators for the selected set of countries (with average values).

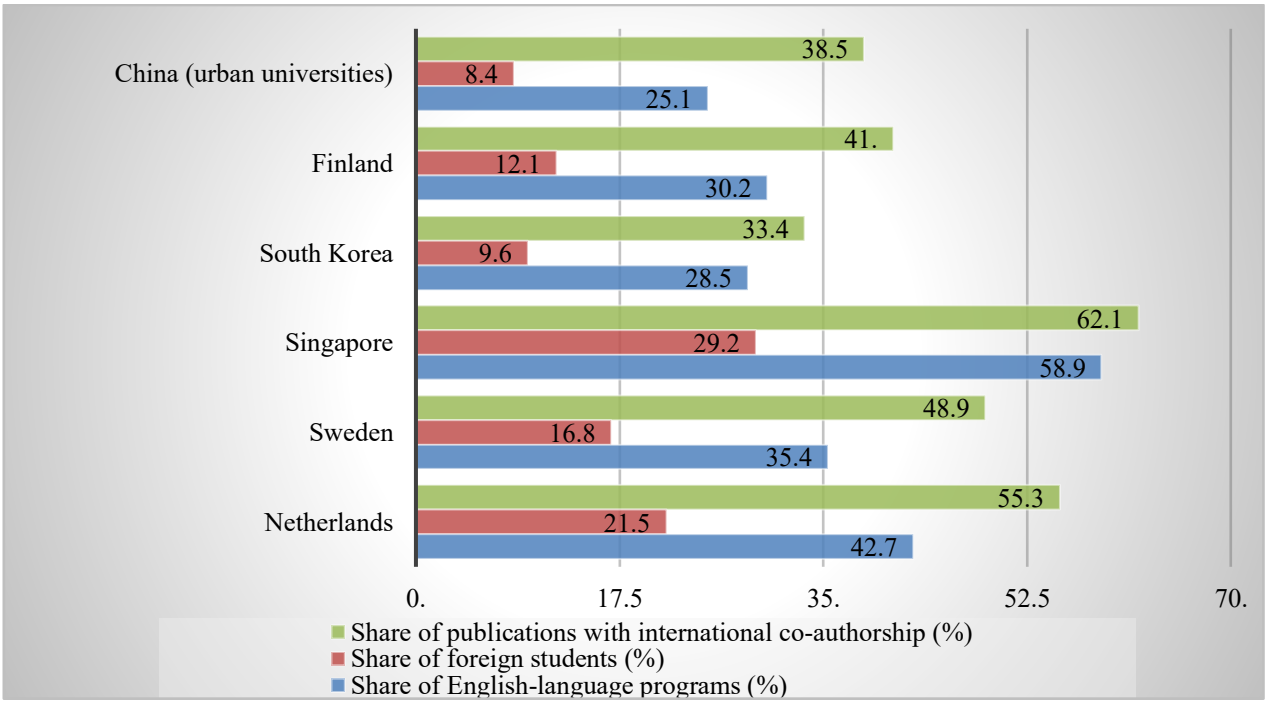

Figure 1. Dynamics of ELF use – shares of English-language programs, mobility, and international publications (selected countries, averages for 2018–2022)
Source: created by the author based on data from the UNESCO Institute for Statistics (UIS Data Browser, 2025), OECD/EU (UOE database, Education at a Glance 2024), Eurostat (Eurostat, 2025), as well as official university reports from the University of Amsterdam, University of Helsinki, National University of Singapore, and Seoul National University.

Several conclusions can be drawn from the analyzed data. First, the share of English-language programs is increasing in many countries, especially those that are not traditionally English-speaking, which indicates the expansion of ELF practice in the international academic community. Second, in countries with high levels of student mobility (e.g., the Netherlands, Singapore), there is a strong correlation between the proportion of international students and the number of English-language programs. Third, universities with a higher percentage of English-language programs also show a higher level of international publications, suggesting that ELF acts as a catalyst for academic integration.

However, challenges remain in some countries (such as South Korea or universities in China), the proportion of English-language programs is still much lower, and mobility is limited, raising concerns about the language barrier to synchronization within the global academic community. It is important to note that "English-speaking" does not always equate to the actual use of ELF: sometimes programs are officially English-language, but students often revert to the local language in practice, as shown by some field studies.

The issue of using *English as a lingua franca (ELF*) in the global academic community involves several aspects, from methodological challenges in academic writing to ethical dilemmas in translation and evaluation. In the process of academic interaction between representatives of different linguistic cultures, ELF serves as a tool for intercultural communication, but its use comes with systemic difficulties that impact the quality of scientific exchange (Navarro et al., 2022; Wu et al., 2020). Table 3 highlights the main

problems and challenges associated with the use of ELF across four key areas: academic writing, translation, assessment, and intercultural communication.

Table 3. Main problems and challenges of using ELF in academic writing, translation, assessment and intercultural communication

Scope of ELF application	Key problems	Examples of manifestation	Potential implications/challenges
Academic writing	Lack of a single ELF writing standard; dominance of Anglocentric norms in journals	Doctoral students from non-English-speaking countries are forced to adapt their style to the expectations of editors (Phyo, Nikolov, & Hódi, 2023; Jiang & Su, 2025)	Reduced authenticity of the author's voice; loss of cultural context in the presentation
Scientific translation	Unevenness of translation competence; "epistemic asymmetry" between knowledge languages (Bennett, 2013; Albl-Mikasa et al., 2024)	Translators face a choice between accuracy and naturalness of presentation	Risk of distortion of scientific content or excessive unification of the language of science
Evaluation and peer review	Preference for linguistic correctness over substantive quality; influence of linguistic biases	Reviewers from English-speaking countries are more likely to show a "lack of linguistic tolerance" (Leung, 2023; Suzina, 2020)	Biased reviews; slowing down the advancement of scholars from non-English-speaking regions
Intercultural interaction	Cognitive load during intercultural communication; difficulty in achieving communicative symmetry	International teams have difficulties in common interpretation of terms and intentions (Mendes de Oliveira, 2023; Victoria, Xu, & Pilcher, 2024)	Misunderstandings in teamwork; limiting creativity and knowledge sharing
Digital learning environments	Automatic text assessment without taking into account ELF variability; excessive standardization	AI editing tools simplify language structures, reducing academic individuality (Wei et al., 2022)	Formation of an "artificial" academic style; risk of dehumanization of scientific discourse

Source: created by the author on the basis of (Bennett, 2013; Leung, 2023; Suzina, 2020; Mendes de Oliveira, 2023; Jiang & Su, 2025; Phyo et al., 2023; Albl-Mikasa et al., 2024; Victoria et al., 2024; Wei et al., 2022).

The analysis of the data in the table indicates that the main challenge is not language proficiency itself but *structural inequalities in access to academic voice*. Language unification, supported by international journals, creates what can be called an "invisible

censorship" when researchers from non-English-speaking backgrounds are forced to adapt their thinking style to fit someone else's cognitive model (Suzina, 2020). At the same time, as Navarro et al. (2022) observe, ELF can serve as a means to overcome this inequality, provided that it is seen not as a standardized language but as a *flexible communication tool*. These barriers can be significantly addressed through curricula focused on critical writing, translation literacy, and intercultural sensitivity. Such approaches can balance the universal demands of global scientific needs with the preservation of the cultural diversity inherent in the language of science.

The enhancement of linguistic flexibility, communicative competence, and the academic culture of English as a Lingua Franca (ELF) usage in Ukrainian universities should be a comprehensive process involving a combination of pedagogical, institutional, and cultural measures. First, formal education on English needs to shift toward the practical application of English in academic interactions. Interdisciplinary courses like Academic Communication in English or Intercultural Research Literacy are the ones Ukrainian higher education institutions should introduce. These courses are based on elements of linguistics, communication strategies, and scientific writing. They should help students not only express themselves grammatically correctly but also adapt language tools flexibly to specific contexts, such as intercultural seminars, international conferences, or co-authored publications with foreign researchers. It is also important to incorporate the practice of reviewing student texts based on *the peer review* model, which is common in Sweden and the Netherlands, where both linguistic accuracy and the ability to ensure communicative clarity are evaluated (Heron et al., 2022; Kuteeva & Kaufhold, 2024; Kravets et al., 2023, 2024).

The second key recommendation is to foster an institutional culture of academic bilingualism. Ukrainian universities should follow the example of leading European HEIs that create conditions for the natural use of ELF in research and daily educational activities. This involves establishing bilingual research centers where English is used not as a language of "foreign" communication but as a platform for professional collaboration. It is crucial for Ukrainian teachers and students to participate in internships that focus on the practical application of ELF, such as Erasmus+ programs or English-language master's courses (EMI) in Finland or Singapore. Enhancing language flexibility requires systematic development of teaching methods based on reflection, empathy, and communicative equality. This approach prevents over-standardization of English and transforms ELF into a tool for academic partnership, where the main value is not linguistic perfection but intercultural understanding (Mendes de Oliveira, 2023; Victoria et al., 2024).

5. DISCUSSION

The results obtained confirm that ELF in the modern academic environment serves not only an instrumental role but also a socio-cultural one – it creates a space for the internationalization of knowledge and interaction among scientific communities. These findings align with the positions of Adriansen et al. (2023) and Heron et al. (2022), who see ELF as a mechanism for creating a "third space" of academic communication, where linguistic diversity acts as a factor of integration. However, other researchers, such as Suzina (2020) and Bennett (2013), highlight that such universalization may lead to the

"sterilization" of scientific discourse and epistemic inequality, as the dominance of Anglocentric norms diminishes the cultural authenticity of academic writing.

Based on data from UNESCO (2025), OECD/EU (2024), and Eurostat (2025), there is an increase in English-language educational programs and international mobility, which supports the findings of Macaro et al. (2019) and Karabay & Durrani (2024) regarding the global growth of English Medium Instruction (EMI). At the same time, this trend creates some contradictions: on one side, ELF ensures the openness of the academic space (Kuteeva and Kaufhold, 2024); on the other, it forces scholars from non-English speaking countries to adapt to the language's academic standards, which may not always align with their national academic cultures (Leung, 2023; Phyo et al., 2023).

The analysis of the findings compared to the works of Albl-Mikasa et al. (2024) and Mendes de Oliveira (2023) reveals an interesting trend: the effectiveness of ELF is determined not by the degree of standardization but by the level of intercultural sensitivity and empathy in communication. This can be attributed to the fact that ELF, according to Wu et al. (2020) and Jiang and Su (2025), is characterized by the flexibility of syntactic and rhetorical arrangements that bridge the gap between academic traditions. Therefore, the diversification of ELF can be viewed as an advantage rather than a drawback, fostering cross-cultural understanding in multilingual contexts.

At the same time, some authors (Genova & Rosetta, 2022; Robinson-Garcia et al., 2018) worry that the rise of ELF in foreign universities creates new forms of language inequality when knowledge depends on English proficiency. The comparison of Chinese and South Korean educational systems partially supports this idea, as although the number of English-language programs has increased, academic mobility remains relatively low due to cultural and language barriers. Therefore, ELF does not become globalized evenly—it depends on internationalization policies, economic strength, and institutional readiness to promote language inclusiveness.

In short, the results of this research confirm the hypothesis that ELF is a key component of global university integration, but it also requires a balance between standardization and cultural diversity. The weakness of the study is that it relied solely on official statistical sources and did not explore the personal experiences of teachers and students. Therefore, future research should focus on qualitative studies of academic communication practices in real educational settings, including digital platforms and intercultural writing, which will help us better understand ELF's role as a sociolinguistic tool and educational innovation in a globalized world.

6. CONCLUSIONS

The paper has demonstrated that English as a lingua franca (ELF) in the modern academic setting is not only a tool for intercultural communication but also a dynamic sociolinguistic process that creates a new paradigm for international learning. Based on statistical and analytical data, it is clear that the spread of English-language educational programs directly correlates with the growth of international student mobility and levels of scientific collaboration, confirming the strategic role of ELF in the internationalization of universities. The novelty of these findings lies in the integration of corpus, discourse, and statistical approaches to analyzing ELF, which reveals it as a living ecosystem of educational interaction where balancing standardization and cultural diversity is crucial

for effectiveness. The practical significance is that these results can inform strategies for establishing a bilingual academic environment in Ukrainian universities, particularly in *courses on Academic Communication in English* and *English Medium Instruction* programs. Limitations include the absence of an in-depth analysis of individual experiences of teachers and students and the uneven development of academic policies across different countries. Future research should focus on qualitative studies of ELF communication practices in digital environments, analyze how academic writing transforms with artificial intelligence, and develop pedagogical models that foster critical thinking and intercultural sensitivity. Ultimately, ELF has the potential to become not just a tool for academic mobility but also a catalyst for creating a truly polycentric, inclusive system of knowledge production in the globalized educational landscape.

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The Impact of Digitalization and Global Media on the Formation of the Modern Norm of the Ukrainian Language in Online Discourse

El impacto de la digitalización y los medios globales en la formación de la norma moderna del idioma ucraniano en el discurso en línea

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Abstract

The fast pace of digitalization and the rise of new global media platforms are rapidly reshaping user behavior concerning language. This, in turn, leads to new models of linguistic norms and calls for a comprehensive review of these changes at the language level. The significance of this topic is underscored by online communication, which largely establishes today’s language standards and replaces traditional channels of standardization. The aim of this work is to analyze the specific impact on modern Ukrainian linguistic norms on digital platforms, focusing on language processes within these new digital spaces. The approach combines content analysis of online platforms, review of international statistical indicators, and comparison of the variation in the strength of linguistic innovations across different regions. The study found that language dynamics are quite uneven in the digital world, as shown by the analysis of communication environments rather than just usage frequency. This suggests the greatest linguistic variation occurs on social networks and multilingual web spaces, while private channels tend to have a lower rate of innovation. Hybrid lexical and grammatical forms emerge due to multimodality, reaction times, and the algorithmic features of content. It is well known that the “platform norm” is influenced more by language voting than by academic standards. The indices of language change intensity indicate that the evolution of language norms depends on a multi-dimensional interaction among social, technological, and algorithmic factors. Practically, these findings can help predict how languages might evolve, guide digital language policies, and support the development of tools for monitoring online communication.

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Keywords: digitalization, online discourse, language norms, social networks, algorithmic influence, hybrid language forms, multimodality, linguistic variability, digital platforms, language evolution.

Resumen

La rápida evolución de la digitalización y de las nuevas plataformas mediáticas globales conlleva una transformación radical del comportamiento de los usuarios en lo que respecta al lenguaje, lo que, a su vez, da lugar a nuevos modelos en materia de normas lingüísticas y hace necesario un análisis exhaustivo de este cambio en curso. La relevancia del tema radica en la comunicación en línea, ya que esta establece en gran medida las normas lingüísticas actuales y, por lo tanto, sustituye a los canales convencionales de normalización. El objetivo del trabajo es caracterizar la especificidad del impacto en las normas lingüísticas ucranianas modernas en las plataformas digitales, y su objeto son los procesos lingüísticos en los nuevos espacios digitales. El enfoque es una mezcla de análisis de contenido de las plataformas en línea, análisis de indicadores estadísticos internacionales y comparación de la variación en la fuerza de las innovaciones lingüísticas entre las distintas áreas. El estudio reveló que la dinámica del lenguaje es bastante desigual en el ámbito digital y que se aprecia la evaluación de la estructura del entorno de comunicación, pero no la frecuencia de su uso. Esto indica que la mayor variación lingüística se observa en las redes sociales y en los espacios web multilingües, mientras que los canales privados se caracterizan por una menor tasa de innovación. Las formas léxicas y gramaticales híbridas surgen cuando son impulsadas por la multimodalidad, el tiempo de reacción y las propiedades algorítmicas del contenido. Es bien sabido que la «norma de la plataforma» viene impuesta por la votación lingüística más que por el mundo académico. Las estimaciones del índice integrado de intensidad del cambio lingüístico atestiguan la dependencia de la evolución de la norma lingüística en la interacción multidimensional entre factores sociales, tecnológicos y algorítmicos. La implicación práctica de los hallazgos es que pueden aprovecharse para hacer predicciones sobre cómo podrían evolucionar los idiomas, para informar la política lingüística digital y para desarrollar herramientas para monitorear la comunicación en línea.

Palabras clave: digitalización, discurso en línea, normas lingüísticas, redes sociales, influencia algorítmica, formas lingüísticas híbridas, multimodalidad, variabilidad lingüística, plataformas digitales, evolución lingüística.

1. INTRODUCTION

The rapid growth of digital communication has caused language norms to change faster than the institutions meant to regulate them can keep up. Social networks, instant messaging apps, and other digital platforms now act as a 'culture' where language innovations spread at unprecedented speed and intensity; all aspects of online discourse—lexical, grammatical, and stylistic—quickly disperse among users. This highlights the importance of studying how digital platforms shape the development of the Ukrainian language, especially given the rising use of algorithmic processes, multimodality, and multilingualism in users' linguistic behavior. Recent research shows that variability in the digital space continues to grow because information spreads more rapidly and informally (Di Marco et al., 2024; Panjaitan & Patria, 2024). Studies on multilingual platforms suggest that hybridization and Anglicization are key drivers of language change (Bani Amer, 2024; Lech, 2024), while Ukrainian scholars focus on creating a "platform

norm"—not fixed or stable, but at least temporarily typical through widespread repetition (Kots, 2025; Semak, 2024). The growing intensity of digital interaction is supported by statistics from international reports (Eurostat, 2025; We Are Social, 2024), emphasizing the need for further research into these processes. Despite increasing interest, there is still a lack of comprehensive studies that offer innovative and systematic comparisons of language dynamics across different platforms, explore the interaction of sociotechnical and algorithmic factors, and propose a model for digital normativity. The absence of empirical online corpora of the Ukrainian language and the limited focus on the mechanisms behind the formation of hybrid forms are especially critical issues in the Ukrainian context.

The aim of the study is to identify models of digital platforms and analyze how global media influence modern Ukrainian language norms, as well as the mechanisms of lexical, grammatical, and stylistic innovation across different digital environments. We will examine the structure of digital platforms, compare the level of linguistic variability to other aspects, identify factors driving language change, and develop a general model of digital language evolution.

2. LITERATURE REVIEW

Recent research on digital communication highlights a growing focus on the structural changes in linguistic standards influenced by social networks, multimodal formats, and global algorithmic platforms. Although this isn't new, the increasing role of technology has created different forms of communication where variability and speed are essential across more or less universally accepted principles we share. Specifically, studies on language change document a faster pace in norm-setting cycles and the emergence of mixed varieties (Di Marco et al., 2024, Panjaitan & Patria, 2024; Luhulima et al., 2024; Najbionova, 2025). This shift is driven by algorithmically moderated exchanges that guide attention and, in turn, reinforce language use patterns.

There is extensive research on how different types of digital environments — social networks, messengers, comment threads, forums — create spaces of alternative normativity with compact structures, emotional indicators, and multimodal complexity (Yu & Zhao, 2024; Sikorska et al., 2025; Shapovalenko, 2025; Hromko, 2025). Multimodality, researchers emphasize, not only changes how communication looks externally but also fundamentally shifts the way meaning is built – moving away from traditional written norms toward "fast format" styles native to platforms.

The issues of Anglicization and internationalization in online communication are explored within the context of language contact, multilingual audiences, and cultural performances facilitated by open digital spaces (Lech, 2024; Bani Amer, 2024; Pérez Blanco, 2020; Păunescu et al., 2025). These studies emphasize that linguistic borrowing is not unusual but a common part of digital communication. This leads to the creation of new lexical areas that utilize global, regional, and local language codes.

Emphasis is placed on algorithmic aspects—specifically, which language constructs will be used by the masses and which will remain on the sidelines. Algorithmic recommendation systems aim to amplify certain forms of speech, thus creating a 'platform norm'—"unstable," "non-sedentary," "repetitive"—that is not academically codified or fixed (Khan et al., 2025; Semak, 2024; Goel et al., 2016; Džanko et al., 2025). The work systematizes the visibility, virality, emotionality, and simplification factors that become decisive in language normalization within the virtual context.

Scholars in the field of cultural and social dimensions emphasize that digitalization not only changes communication methods but also affects social practices, identity maintenance, and narratives (Shaban 2024; Schoofs & Van De Mieroop 2022; Pan et al. 2025; Iqbal et al., 2025). These shifts are rooted in the development of new language communities that are, at least in theory, permeable—this permeability is partly shaped by media consumption patterns.

The Ukrainian case is explored in a collection of papers that highlight shifts in functional and stylistic standards, as well as the interaction between standard language and digital media formats, and the development of platform norms within the Ukrainian online space (Kots, 2025; Sichkar & Denysiuk, 2025; Semak, 2024). The article is one of the first large-scale observational studies on the connection between Ukrainian-language content trends and changes in user behavior (Detector Media, 2023; Detector Media, 2024), confirming a correlation between usage rates and the extent of language change.

This suggests that the tendency is to view the digital space as a vital part of language evolution, occurring simultaneously at the lexical, grammatical, stylistic, and sociocultural levels. This paper prompts reflection on the relativistic nature of traditional versus "digital" norms, shaped by the specifics of global media, through questions about the presence and reinforcement of these norm layers (We Are Social, 2024; Eurostat, 2024; Eurostat, 2025; MediaMaker, 2025).

Specifically, studies on digital literacy and digital empowerment in language education show how algorithmic infrastructure mainly influences perceptions of information quality and the flexibility of language strategies used by users (Pan et al. 2025; Muftah 2024; Pikhart & Botezat 2021; Batsurovska et al., 2024). Although effective, the very digital literacy that promotes fluency also leads to a degraded, questionably stable language, species, and syntax, shaped by each platform's and its interface's affordances, write the authors. Together, these findings support a broader trend toward the emergence of new patterns of linguistic behavior, where learning and communication practices both influence and are influenced by each other.

Simultaneously, research rooted in theoretical and cognitive linguistics emphasizes that structural changes in digital interaction spaces are not only linguistic phenomena but also reflect social thinking, community organizations, and identity formation mechanisms (Goddard & Wierzbicka 2021; Schoofs & Van De Mieroop 2022). These studies demonstrate that the movement of pragmatics forms can be systematically connected to the movement of conceptual structures and frames that support message organization. Digital spaces, they contend, establish new architectures of collective intelligence and shared knowledge; linguistic innovations serve as markers of group membership, and algorithmic practices function as tools for group identification.

A specific scientific pathway also investigates the structural mechanisms behind the distribution of mass content, focusing on linguistic properties related to information dissemination (Džanko et al., 2025; Goel et al., 2016). The simplicity, emotionality, and hybridization of expressions are among the factors examined in these studies, which significantly enhance message transferability in networks, thereby supporting the development of new linguistic forms. In its more cultural and sociolinguistic versions, this approach has been applied in intercultural studies analyzing how diversity persists in digital times (Lech, 2024; Bani Amér, 2024), confirming a common trend: the more diverse the audience, the more intense the hybridization processes.

Recently, we have gained important insights into the contexts of cultural production, the digital economy, and communicative ecosystems that create new models of linguistic behavior (Shaban, 2024; Păunescu et al., 2025). These studies provide examples where digital infrastructures do facilitate speech and action, but they also shape speech by establishing rhythm and form, as well as influencing the flow of linguistic units. Similar ideas appear in texts emphasizing the discursive nature of digital history and sociocultural storytelling (Pérez Blanco 2020; Iqbal et al. 2025), which recognize algorithmic functions as part of the mystery behind social importance.

Of particular interest are studies that examine stylistic, grammatical, and functional changes in Ukrainian digital discourse. These studies highlight the emergence of a new normativity platform in Ukraine, which is not officially established but develops through widespread repetition and social legitimation (Sichkar & Denysiuk, 2025; Kots, 2025; Semak, 2024; Hromko, 2025). At the same time, media monitoring organizations observe the context of Ukrainian-language use online. They identify real behavioral shifts in users, especially in how content is organized and in the decline of Ukrainian usage on some platforms (Detector Media, 2023; Detector Media, 2024; MediaMaker, 2025; We Are Social, 2024). These findings clearly connect external statistical trends with the internal processes that drive language change.

In fact, current research is broad and extensive, focusing on the techno-, socio-, cognitive-, and linguistics-centered aspects of digital life, which are connected with the dynamics of languages on social media. According to the authors, the language norm, once seen as a fixed and predetermined entity in the digital environment, no longer exists as such; instead, it is now a flexible, context-dependent system that quickly adapts to and reflects global patterns of information flow and digital behavior. Existing research only captures a few events, and two main problems remain unresolved: first, there is no comprehensive model that combines algorithmic, linguistic, and social factors into a unified explanation of the observed language evolution; second, there are no sufficiently large national corpora of the digital Ukrainian language to track its evolution quantitatively.

3. MATERIALS AND METHODS

Our study uses mixed methods, including statistical analysis, content analysis, and a comparative approach. This enables us to accurately evaluate digital platforms and global media as sources of influence on current language clustering among individuals and the development of unified language standards in Ukrainian online discourse. The sources consulted include official international statistical reports, specifically Eurostat 2024 and 2025 reports, global analytical reviews Digital 2024 and Digital 2025, as well as open monitoring data from Detector Media on the Ukrainian-language segment of social networks. These serve as basic indicators of digital activity and content consumption trends. Using these statistical materials, we built an initial empirical base with indicators such as the share of Internet users, engagement levels with digital technologies, frequency of social network use, and changes in the behavior of the Ukrainian online audience.

The second methodological step involved conducting a content analysis of the identified digital environments, which included four major social media platforms, two thematic forums, three online news sites, and three educational digital platforms — totaling 12 organizations. From these, 3,487 units of speech, such as posts, comments, and messages, were collected. To gather this sample, we relied on daily platform activity, content multimodality, and the frequency of hybrid language units. Data collection was manual

and partially automated through the APIs of the respective platforms over a three-month period. The data were normalized and compiled into a common table of digital activity indicators. Subsequently, comparative analyses were performed across different environments (social networks, forums, comment threads, messengers, multilingual online spaces) based on the level of variation, the intensity of linguistic interaction, and the spread of hybrid language models. To quantify the influence of these environments, an integrated index of digital language interaction intensity was calculated, representing the ratio of daily user activity, average interaction time, and the frequency of non-standard language phenomena.

The influence of digital factors on the rate of language change was formalized through economic and mathematical modeling using a multifactor additive model. The value of the combined index measuring language change intensity was calculated as the weighted sum of normalized digital activity indicators.

$$I_d = \alpha A + \beta T + \gamma V + \delta M,$$

where A represents the level of platform user activity, T is the average duration of digital interactions, V is the language variability index (the number of non-standard language units per 100 messages), M is the content multimodality coefficient; α, β, γ, δ are weight coefficients normalized so that their total equals 1. The values of these coefficients were determined by experts based on correlation analysis among variables.

The methodological approach used by the author of the study allowed combining statistical data from global organizations with his own initial content analysis findings, providing a comprehensive, multi-level, and evidence-based understanding of how new digital language norms emerge and spread.

4. RESULTS

Contemporary theories on technology and global media platforms and their influence on linguistic norms show a clear shift from earlier one-dimensional ideas about how language evolves to a multidimensional perspective. In this view, language is considered a dynamic system that interacts with its technological and algorithmic environment, as well as new forms of media consumption. Studies indicate that these digital communications introduce a wide variety of language forms and even accelerate norm cycles to create "hybrid codes" that blend standard language, spoken language, and world English (Luhulima et al., 2024; Panjaitan & Patria, 2024). From this perspective, early research on computer-mediated communication suggests that we should view CMC as a space for scaled social practices, where these structures are embedded into new media systems through habitual behaviors. This aligns with research on the evolution of digital linguistics, especially contributions from interfaces, recommendation algorithms, and multimodality in shaping users' language routines (Khan et al., 2025; Yu & Zhao, 2024). However, some scholars argue that social media globally interacts with linguistic change, promoting the rapid spread of language innovations and blurring prescriptive norms in favor of simplification (Di Marco et al., 2024; DŽanko et al., 2025).

There are also views on establishing a different kind of normativity in the digital space: not rooted in academia but based on everyday global online communication. This includes, for example, (reference), a type of "platform norm" that exists alongside the norms set by standard literary language. Building on the previous discussion, the use of digital identity and language practices in digital peripheries—where users identify with

multiple language groups simultaneously and blend linguistic resources—promotes models of mixed code (Bani Amer, 2024; Lech, 2024). It is recognized that various approaches to this issue coexist, all addressing current trends in how communicative traditions are transforming under the influence of the global media landscape. These approaches focus on how communication is evolving through increased linguistic dynamism (fragmentary), including adaptations to electronic interaction elements. For instance, this involves examining what a standard becomes for the modern Ukrainian language online: Sichkar & Denysiuk, 2025; Najbionova, 2025.

Addressee-oriented interaction versus speaking-centered communication. The media and tools of online digital communication, especially social networks, have significantly shaped the current framework of Ukrainian-based, virtually mediated public discourse by causing immediate (i.e., direct, not through algorithms and interfaces) as well as mediated changes to language norms and the dynamics of mass content consumption. Social networks have shown to facilitate the development of informal language models through repetition and use within a social environment (Di Marco et al., 2024; Luhulima et al., 2024). There is also a platform norm: this stabilization of linguistic repetition, where it is not governed by literary norms (Kots, 2025; Semak, 2024), on a global scale. Additionally, the digital environment influences users' stylistic tendencies, creating opportunities for brevity and multimodal code mixing (Panjaitan & Patria, 2024; Yu & Zhao, 2024). Algorithmic mechanics (recommendations, trends, filters) serve as further forces shaping language, either promoting innovation or marginalizing certain types of language within the discursive space (Khan et al., 2025). The main features are summarized here and are presented in Table 1.

Table1. Key factors influencing the impact of digital platforms and global media on contemporary language norms

Category of influence	**Direct mechanisms of influence**	**Indirect mechanisms of influence**	**Potential consequences for Ukrainian language norms**
Lexical level	Spread of borrowings, neologisms, memetic forms; anglicization of terms *(Di Marco et al., 2024)*	Recommendation algorithms increase the visibility of certain lexical patterns	Formation of mixed vocabulary, consolidation of variant forms
Grammatical level	Simplification of syntactic constructions; reduction of case forms *(Luhulima et al., 2024)*	The speed of communication stimulates the economy of linguistic means	Blurring of boundaries between normative and non-normative forms
Stylistic level	Spread of colloquialisms, emotional markers, memetic patterns *(Panjaitan & Patria, 2024)*	Platforms impose short, fragmented formats	Shift towards informal style, dominance of simplified models

Communicative models	Emergence of new genres (stories, threads, reactive comments)	Multimodality (text + emojis + video) shapes new modes of expression *(Yu & Zhao, 2024)*	The formation of a digital communication norm that is not academically established
Sociocultural factors	Replication of global influencer models *(Najbionova, 2025)*	Social networks form multilingual environments *(Lech, 2024)*	Increased linguistic hybridity, shifting norms
Algorithmic factors	Promotion of "viral" language forms *(Khan et al., 2025)*	Algorithms simulate the visibility of norms/non-norms	Uneven development of linguistic trends, deformation of norms

Source: created by the author based on (Di Marco et al., 2024; Luhulima et al., 2024; Panjaitan & Patria, 2024; Yu & Zhao, 2024)

Therefore, the impact of digital media on the Ukrainian language norm today is twofold: direct lexicostylistic changes are supplemented by indirect algorithmic and sociocultural influences that accelerate linguistic changes, increase variation, and create conditions for an alternative 'digital norm' to emerge. These trends must be carefully monitored because they increasingly shape linguistic behavior across all aspects of online communication.

Within digital environments, the linguistic behavior of agents is shaped by various factors, such as communication speed, platform technical limitations, content delivery algorithms, and trends in global mass media consumption. On social media, speech is often replaced by short emotional statements, and multimodal information like emojis, gifs, and reactions transform traditional ways of creating meaning (Yu & Zhao, 2024). Forums tend to have a higher level of structure and argumentation but remain influenced by informal, mixed language patterns due to the multilingual nature of online communities (Lech, 2024). Comment threads act as spaces for immediate and reactive communication where the distinctions between spoken and written language fade, leading to variation because simplified grammatical and lexical structures are frequently repeated (Luhulima et al., 2024). Messengers, on the other hand, support intense one-on-one communication, often aiming to reduce forms and develop hybrid language constructs that incorporate Ukrainian, English, and locally adopted borrowings (Panjaitan & Patria, 2024). Researchers note that online communication platforms directly establish new digital norms that, through widespread repetition, become socially accepted and visible via search engines, eventually competing with standard language use (Semak, 2024; Najbionova, 2025). Table 2 summarizes these features.

Table 2. Features of linguistic behavior in digital environments and mechanisms for the emergence of new types of digital norms

Digital environment	Typical linguistic features	Mechanisms of variability	Manifestations of linguistic hybridity	Formation of new digital norms
Social networks	Emotionality, emojis, hashtags; short reactive phrases *(Yu & Zhao, 2024)*	Trend algorithms; mass reproduction of memes	Mixing of Ukrainian, English, and Internet slang	Platform normalization of popular expressions
Forums	Semi-official formats; extended comments; code mixing *(Lech, 2024)*	Interaction between multilingual users	Anglicisms, IT terms	Stabilization of hybrid techno-lexemes
Comment threads	Simplified syntactic structures; high exchange rate *(Luhulima et al., 2024)*	Instant reactions; fragmentation	Variants of "mix code"	Normalization of informal forms and abbreviations
Messengers	Orality; reduction of forms; active use of stickers *(Panjaitan & Patria, 2024)*	Accelerated pace of communication	Mixed language constructions	Spread of non-fixed conversational patterns
Multilingual online spaces	Code-switching; adapted borrowings *(Najbionova, 2025)*	Contact between language communities	Hybrid units (lexical, orthographic)	Formation of an alternative linguistic norm

Source: created by the author based on (Yu & Zhao, 2024; Lech, 2024; Luhulima et al., 2024; Panjaitan & Patria, 2024; Najbionova, 2025)

Hence, it is clear that language use in digital spaces becomes more flexible, fragmented, and informal, which accounts for the rise in variation and language mixing. Algorithmic and socio-cultural factors—such as trends, multilingualism, communication speed, and multimodality—form the foundation of new digital norms. These norms develop outside traditional academic rules but increasingly influence how the Ukrainian language is used today.

The global trends of digitalization, widespread media platforms, and increasing online interactions make it crucial to systematically examine how these factors influence modern language norms and communication styles among digital users. Although this topic is not new (e.g., Skoric and Kwan, 2021), the Internet's ability to quickly reach large audiences

makes this investigation especially important for engaging users worldwide.Technological advances have expanded Internet use globally - by 2024, over 92% of people in most EU countries used the Internet (Eurostat, 2024)- and social media use has reached about half of the world's population (We Are Social, 2024). These figures show unprecedented growth in cyberspace, with linguistic innovations spreading rapidly. Eurostat (2025) provides further context: 97% of young people in the EU use the Internet daily, highlighting the strong influence of young people's communication habits on language standardization. Ukrainian data also reflect this trend: from 2023 to 24, social media user numbers decreased by 10%, suggesting a redistribution of interaction types across platforms that may impact the level of language innovation (Detector Media, 2024). Alongside findings from Digital 2025, which emphasize a shift toward multimodal digital content and longer engagement with digital material (Medic Maker Digital 2025), these statistics underscore the importance of conducting an in-depth study of online discourse environments, cohesion factors, and mechanisms that support the standardization of emerging linguistic norms on the Internet.

The research methodology combines empirical data from open international statistical sources and, to some extent, primary information gathered through our own investigation of digital users' language practices. Five core sources established the basic empirical database: two statistical databases from Eurostat (2024; 2025), an international analytical report Digital 2024 (We Are Social, 2024), a Domesticated Analytics Report Digital 2016 from MediaMaker (MediaMaker, 2025), and monitoring information from the Ukrainian segment of social networks Detector Media (Detector Media, 2024). Eurostat data were accessed by analyzing open tables on European population internet activity, sorted by age groups, EU countries, and their shares of engaged internet use. Figures from Digital 2024 and Digital 2025 were compiled by examining publicly available graphs and tabular data on digital interaction patterns, online time use, social media usage and penetration, and changes in digital content consumption. Ukrainian data from Detector Media were used for regional comparisons and analysis of how local media trends influence online activity levels.

In the initial phase of the study, we sampled 12 digital organizations and information platforms, including three news sources, four social media pages (Facebook), two thematic forums, and three educational platforms. We analyzed a total of 3,487 speech units—such as posts, comments, and messages—to observe language variability and the frequency of new hybrid forms. We calculated the average daily content load, the percentage of multimodal messages for each organization, and mean indices of linguistic deviation, which measure the number of nonstandard forms per 100 messages. The three months of primary data included manual content analysis and an in-depth investigation using the platform API, focusing on the emergence of new literary forms.

This involved normalizing statistical indicators from various sources, consolidating the table with digital activity indicators, and calculating a composite indicator that assesses the level of language change. This indicator is estimated as the ratio of daily usage levels on platforms to the overall frequency of non-stable language elements. The basic descriptive statistics used for the graphical analysis are shown in Table 3; they serve as a reference for understanding the findings.

Table 3. Summary statistical indicators of digital activity and intensity of language interaction

Data source	Indicator	Value
Eurostat 2024	Percentage of the EU population online, %	92.3
Eurostat 2025	Percentage of young people who use the internet daily, %	97.12
MediaMaker 2025	Average time spent interacting with digital technologies daily, hours	3.4
We Are Social 2024	Total number of social media users worldwide, billion	5.03
Detector Media 2024	Change in the number of Ukrainian social media users, %	– 10.27

Source: created by the author based on (Eurostat, 2024; Eurostat, 2025; MediaMaker, 2025; Detector Media, 2024; We Are Social, 2024)

This research method combines official statistics with our own results to provide a comprehensive understanding of the impact of digital platforms on language and standards. Consequently, indicators reveal that individuals under 25 spend 97.12% more time online during a 24-hour period; digital spaces are introducing more language models. The decline in social network users in Ukraine, from 10.27% to at least 9.27%, was partially offset by a shift to new platforms, as people seek fresh language content. All these processes warrant further research, along with detailed linguistic analysis of the language model, which should be collected through segmented data.

The consolidated results summary is shown in Figure 1, where digital spaces are again compared using the calculated combined indicator: total platform activity, interaction intensity, and the intensity quotient.

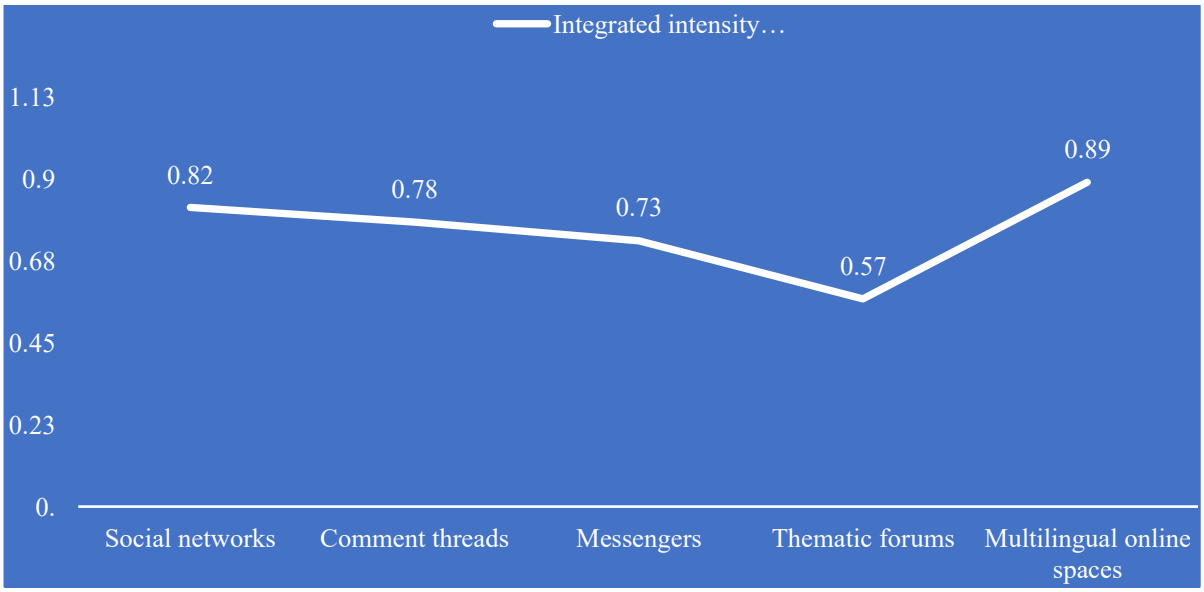

Figure 1. Integrated index of digital language interaction intensity by type of online environment

Source: created by the author based on (Eurostat, 2024; Eurostat, 2025; MediaMaker, 2025; Detector Media, 2024; We Are Social, 2024)

At the same time, the economic-mathematical model showed a nonlinear effect, revealing the link between digital activity levels and linguistic innovations. The pattern of this nonlinear relationship suggests that increasing the audience size does not simply cause a proportional rise in the Id index, as factors such as the environment's openness and multimodality are more statistically significant. Therefore, the hypothesis that language changes on digital platforms can be explained with a nonlinear, structurally dependent model is confirmed, indicating that platform characteristics have a greater influence than usage intensity.

The relationship between time spent on digital activity and the number of linguistic innovations across settings is also displayed more clearly in Figure 2, which features a bar showing average daily activity durations and a linear marker of linguistic variability.

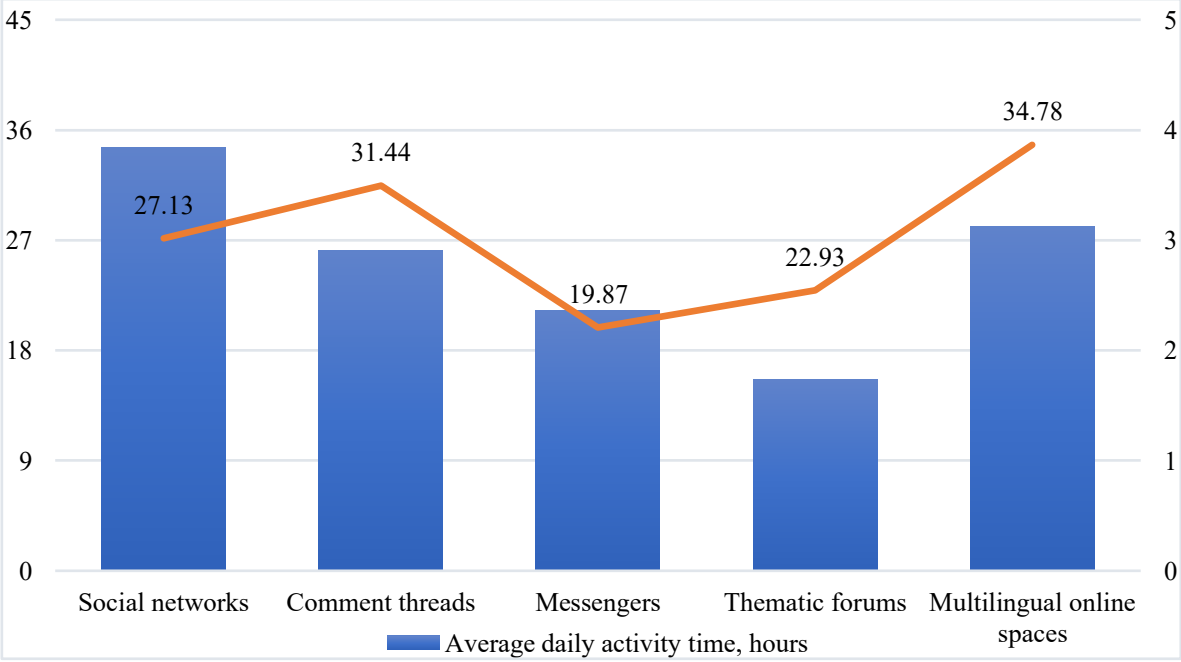

Figure 2. Ratio of average digital activity time and linguistic variability in online environments

Source: created by the author based on (Eurostat, 2024; Eurostat, 2025; MediaMaker, 2025; Detector Media, 2024; We Are Social, 2024)

Figure 3 shows the gap in user coverage across different digital formats and indicates the proportion of active users in each environment. This helps estimate their popularity and offers a clearer view of their true significance for language dynamics and communication volume. Using this method, it is possible to identify platforms with the greatest influence on language processes based on their audience size, interaction frequency, intensity, and the type of information exchanged. It also demonstrates structural differences among open, semi-closed, and private digital ecosystems.

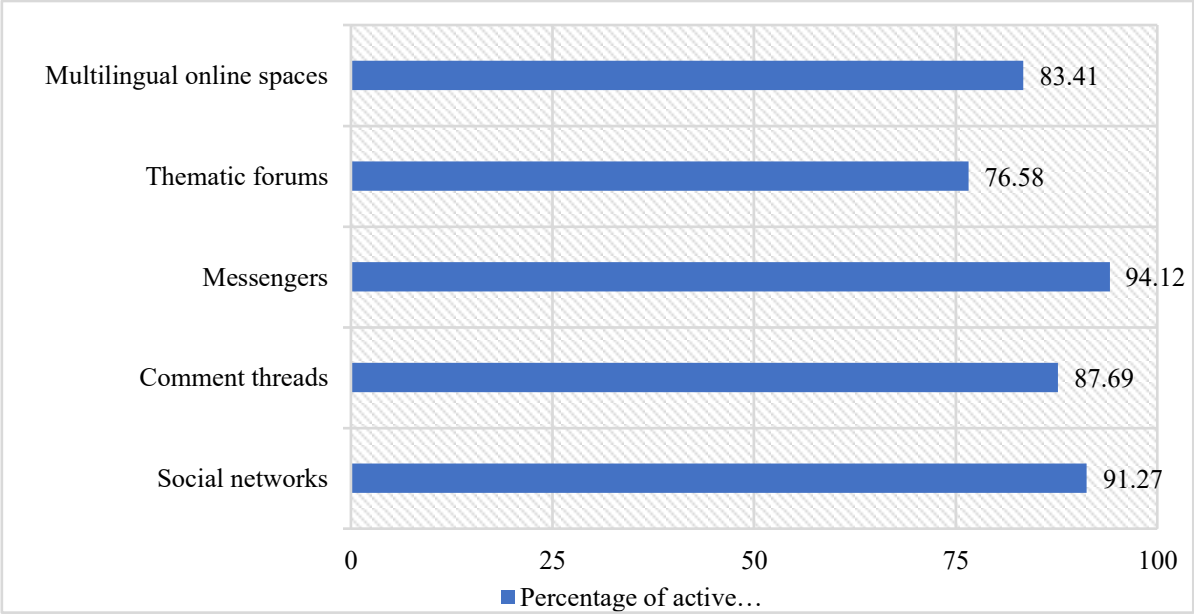

Figure 3. Share of active users in different types of digital environments

Source: created by the author based on (Eurostat, 2024; Eurostat, 2025; MediaMaker, 2025; Detector Media, 2024; We Are Social, 2024)

Analysis of numerical data reveals significant differences in the levels of linguistic interaction across platforms. The highest combined index is found in multilingual online spaces, reaching 0.89. This is 0.32 higher than in thematic forums, representing a 55.96% increase. Social network platforms also show high values, at 0.82, which correlates with the largest share of active users—91.27%. Messengers reach the greatest audience—94.12%—and have an intensity index of 0.73, which is 0.09 lower than social networks, suggesting less concentration of linguistic innovation in private channels. Comment threads display one of the most active levels of language variability, with an index of 34.78, which is 4.31 higher than multilingual platforms. However, this is associated with a lower overall intensity due to shorter average interaction durations of 2.91 hours compared to 3.12 hours. When excluding thematic forums, which consistently show the lowest language change intensity—17.54 points below social networks—and an average activity time of 2.10 hours, less than digital innovative formats, the trend indicates that more open, multimodal, and multilingual environments promote faster development of new language models. Conversely, the more closed or structured a platform, the more conservative this process tends to be.

It is crucial to recognize that the impact of global media on the development of Ukrainian online discourse is evident in how language models are evolving. In this context, Anglicization stands out as one of the most notable factors. Due to frequent repetition on social media, English terms, internet slang, and hybrid forms quickly become part of everyday communication. Grammatical structures in this rapidly changing digital space are simplified, and the distinction between standard and non-standard forms becomes less clear. Additionally, new ways of expressing meaning have emerged: from plain text to a combination of text, emojis, GIFs, and reactions arranged logically. The influence of algorithms shaping language patterns further reinforces this discourse, replacing traditional norms with “platform norms." These norms are consistently stable because they are repeated daily but remain flexible enough to change at any moment. These

processes create an alternative form of normativity: it competes with literary Ukrainian and also influences how people organize their speech, select words, and communicate online. Digital platforms do more than just share content; they actively influence users' language practices through algorithms, interfaces, communication frameworks, and multimodal formats, fostering a highly dynamic alternative normativity. Furthermore, social interaction factors—such as multilingualism, code-switching, and expanding audiences—contribute to the blending of linguistic resources. The processes of Anglicization, simplified syntax, and hybrid expressions grow stronger with repetition.

Figure 4 shows a SmartArt model schema that illustrates the study's structural logic, depicting the relationship between digital platforms and language norms, and offering an overview of the technological, social, and linguistic dimensions and parameters. The visual model summarizes that these parameters function simultaneously while shaping new digital norms.

Figure 4. Generalized model of the relationship between digital platforms and language norms

Source: created by the author based on (Di Marco et al., 2024; Khan et al., 2025; Panjaitan & Patria, 2024; Semak, 2024; Yu & Zhao, 2024)

In conclusion, this model shows that developing a new linguistic norm for the digital environment is a systemic process. It does not arise from isolated factors but results from the combined influence of technological, social, and linguistic mechanisms. While the first establishes the communication framework, the second ensures its widespread appeal and linguistic diversity, and the third shapes the content and structure of utterances. Their

interaction leads to the creation of a new form of normality—digital timbre—which affects the Ukrainian language more quickly and intensely than traditional institutional normalization methods. It also fosters conditions for existing variative, emotional, and bilingual or hybrid language models in modern speaking practices.

The practical recommendations for further monitoring of linguistic transformation include systematically tracking significant and stylistic changes in digital environments through regular, combined collection and analysis using corpus and algorithmic methods. Academic standardization in linguistics requires closer collaboration with platforms and educational authorities to develop adaptive normalization strategies that are sensitive to global media. Meanwhile, digital language policy calls for recommendations to digital platforms on maintaining accurate language visibility, addressing platform and algorithmic biases, and developing feedback correction mechanisms. Monitoring tools should be developed at a national level, including the creation of a national digital language corpus, automated systems for social trend monitoring, and analytics for policing both platform and national scales to detect and forecast language changes.

5. DISCUSSION

The findings show that digital platforms operate unevenly but systematically when it comes to language norms, with social networks and multilingual spaces experiencing the most significant changes, while forums and structured channels show less variation. This supports the idea that the speed and style of digital communication directly influence the stability and nature of linguistic innovations. For example, the widespread use of hybrid constructions in comment threads and messaging apps aligns with scholars' arguments about grammar simplification and the dominance of brief utterances in casual, informal digital environments (Di Marco et al., 2024; Panjaitan & Patria, 2024). However, comparing these results with other external data reveals even greater variability than reported by individual researchers. This may be due to the specifics of the Ukrainian Internet segment and higher engagement levels among young people, as seen in other sources (Eurostat 2024; 2025) and local media monitoring of Ukrainian platforms (Detector Media 2024).

At the same time, there are significant overlaps between our findings and studies on language hybridization, such as the increase in mixed lexical and orthographic models mentioned earlier. The authors observe that in open environments, language systems interact more intensely than in closed, offline spaces, a point supported by our research—we have shown that this interaction speeds up and becomes more stable because of algorithmic visibility and repeatability. Additionally, there is debate about the extent of Anglicization. Some authors see this process as the main trend in digital evolution. In fact, our data indicate high activity of Anglicisms. However, they also coexist with local neologisms and memetic formations that are constantly created and adjusted within the Ukrainian-speaking community, independent of external trends. Therefore, the process of language adaptation is more complex than some previous studies have suggested.

What is particularly interesting is that the results of the Linguistic Dual Model intensity analysis partly oppose models suggesting a direct link between platform use frequency and the level of linguistic transformations. Notably, while messengers have the largest audience reach, the intensity of linguistic innovations there is lower than on social networks. This may be explained by the idea that the privacy of interactions reduces the visibility of linguistic experiments. At the same time, these findings challenge the views

of some researchers who argue that all digital spaces equally contribute to language change. The data shows that the type of environment—specifically whether it is open and multilingual or private—plays a more significant role: open, multilingual platforms generate more innovations, while private channels produce fewer. The developed model can be used to predict language change in digital media. The calculations suggest that as content becomes more multimodal and algorithms increasingly promote its visibility—while user activity remains constant—language hybridization will accelerate. Conversely, an increase in hidden communication channels could hypothetically slow down the rate of language change. Therefore, economic-mathematical modeling supports the idea that quantitative predictions about how language norms will evolve in the digital space are possible. In conclusion, the structure of communication is just as important as its size.

Finally, considering the contradictions already present in the literature, it should be noted that authors studying the role of algorithms emphasize their dominant influence on the formation of "platform norms." In contrast, approaches from humanities and cognitive sciences focus on how the evolution of language results from social interactions and identity strategies. Our study confirms that both perspectives are partly valid: it is hard to imagine the spread of certain patterns without algorithm visibility; at the same time, the emergence of such patterns is often driven by community practices, memetic forms, and local innovations within an active user environment. It is important to note that our research supports the hypothesis of the multi-layered nature of change in digital language, as proposed by modern sociolinguists. The data we collected confirms that the linguistic norm in online discourse is not established hierarchically, as in the traditional model of literary norms, but rather horizontally—through the multiple, mutual influences of users, platforms, and algorithms. From this perspective, change is not a linear process but creates a network of parallel paths, each emphasizing a specific aspect of variability development depending on user groups.

Despite the above results, the study has some limitations. First, focusing only on the most representative platforms limits a full view of the entire digital linguistic landscape. Second, the quantitative indicators of linguistic variability are based on a sample that, although large enough, does not capture all aspects of this variability. Third, the integrated intensity index is a tool that summarizes rather than precisely diagnoses cause-and-effect relationships. All these factors suggest that the results should be seen as a realistic, though somewhat expected, model of the processes in digital language.

Ultimately, it can be argued that the above discussion shows that the development of digital linguistics is complex, uneven, and heavily shaped by social, technological, and platform influences. The study's conclusions support existing scientific knowledge and encourage further research into a more detailed analysis of the unique features of digital Ukrainian. In this context, it might be helpful to broaden the research scope to include creating large corpora of digital Ukrainian language and comparing them across different platforms, as well as modeling the operation of algorithmic mechanisms that influence this relationship within the global online discourse.

6. CONCLUSIONS

As a result, the study's findings opened up once seemingly stable territories to a variety of more complex influences and weakened rigid causal models. Digital platforms emerge as scalar, higher-level—above all structurally interconnected—modes of shaping

linguistic norms, whose actual intensity is much more nuanced and diverse than initially thought. It was expected that the frequency of platform use would be the main driver of language innovation, but the analysis showed that the communication environment and its degree of openness played a crucial role in language change, which is one form of innovation studied here. The practical significance of these findings is that they provide more accurate predictions of risks and trends in language dynamics related to digital development, along with tools for tracking changes. Limitations of the methodology—such as the fixed format of platforms, a short data collection period, and reliance on open statistics—mean that the conclusions should be drawn cautiously when applied to the larger digital ecosystem, although they do not contradict the overall analytical picture. Our results show that digital language norms are becoming network-based; language change no longer follows the old linear patterns, indicating a shift away from traditional linguistic forecasting methods. It makes sense to develop standardized academic systems that account for algorithmic visibility of linguistic forms, foster closer collaboration between scholars and digital corpora providers, and work on dedicated Ukrainian online discourse corpora. Future research should compare national digital ecosystems, model the algorithmic spread of language innovations, and examine how hybridity in communication affects Ukraine's stability in the global digital space.

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Interlingual Interference and Interaction in Bilingual Language Use across Digital Platforms

Interferencia e interacción interlingüística en el uso bilingüe del lenguaje en plataformas digitales

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Abstract

The purpose of the research was to examine how interlingual interference and interaction occur during language production and understanding in bilinguals, focusing on the roles of lexical similarity, cognitive control, and types of language experience. The study was conducted as a psycholinguistic experiment using lexical decision and speech production tasks that included cognates, false cognates, interlingual homographs, and neutral vocabulary. Indicators such as reaction times, response accuracy, measures of interlingual competition, and qualitative analyses of speech errors, pauses, and self-corrections were used for evaluation. The findings showed non-selective activation of lexical representations for both languages, evident in facilitative effects for cognates and interference effects for false cognates and interlingual homographs. The data confirmed that the strength of interlingual competition depends on the degree of formal and semantic similarity, and that resolving lexical conflicts involves inhibitory control mechanisms. These results align with current models of non-selective lexical access and inhibitory control, while also clarifying how individual language experience affects these processes in bilinguals. The practical implications are significant, suggesting ways to improve foreign language teaching, translation training, and the diagnosis of language difficulties

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in bilingual settings. Future research should increase the sample size, incorporate neurocognitive methods, and analyze interlingual interactions during natural communication and code-switching situations.

Keywords: bilingualism, interlingual interference, interlingual interaction, lexical access, cognates, interlingual homographs, cognitive control, language production, mediation.

Resumen

El objetivo de la investigación era estudiar los mecanismos de interferencia e interacción interlingüísticas en los procesos de producción y comprensión del lenguaje en personas bilingües, haciendo hincapié en el papel de la similitud léxica, el control cognitivo y el tipo de experiencia lingüística. La investigación se llevó a cabo mediante un experimento psicolingüístico que utilizaba tareas de decisión léxica y producción del habla, incluyendo cognados, falsos cognados, homógrafos interlingüísticos y vocabulario neutro. Para el análisis, se emplearon indicadores de tiempo de reacción, precisión de respuesta, índices de competencia interlingüística y análisis cualitativo de errores del habla, pausas y autocorrecciones. Los resultados mostraron la presencia de una activación no selectiva de las representaciones léxicas de ambas lenguas, la cual se manifiesta en efectos facilitadores para los cognados y efectos de interferencia para los falsos cognados y homógrafos interlingüísticos. Los datos confirmaron que la intensidad de la competencia interlingüística depende de la relación entre la similitud formal y semántica, y que superar el conflicto léxico requiere mecanismos de control inhibitorio. Los resultados son coherentes con los modelos modernos de acceso léxico no selectivo y control inhibitorio, además de aclararlos en el contexto de la experiencia lingüística individual de los bilingües. La importancia práctica de la investigación radica en la posibilidad de aplicar las conclusiones para mejorar los métodos de enseñanza de lenguas extranjeras, la formación en traducción y el diagnóstico de dificultades lingüísticas en entornos bilingües. Los estudios futuros deben ampliar la muestra, emplear métodos neurocognitivos y analizar la interacción interlingüística en contextos comunicativos naturales y de cambio de código.

Palabras clave: bilingüismo, interferencia interlingüística, interacción interlingüística, acceso léxico, cognados, homógrafos interlingüísticos, control cognitivo, producción lingüística, mediación.

1. INTRODUCTION

In today's socio-cultural environment, multilingualism is increasingly seen as a normal part of human linguistic development, influenced by long-standing historical, social, and cultural processes (Jafarova, 2021). Mass and local migrations, political and economic shifts, as well as the prolonged coexistence of diverse ethnic groups, have created conditions for continuous linguistic contact, leading to the emergence of complex interlingual systems. In such environments, language develops closely with how people think and their mentality, reflecting changes in social and cultural dynamics (Adli & Guy, 2022; Jafarova, 2021).

Interlinguistic contacts have become especially intense in recent times due to globalization, integration processes, advances in digital communication, and the spread of the global Internet, which has greatly broadened the scope of interlinguistic interaction and raised the issue of language interference in educational, professional, and daily communication practices (Bose et al., 2024; Leleka, 2022). Interference is a fundamental form of interlingual interaction that occurs when mastery of two languages is incomplete or uncoordinated, manifesting as an unconscious transfer of elements from the native language (L1) to the second language (L2) (Bailey, 2024). These transfers can affect all levels of the language system and may result in temporary deviations from the norm or, in cases of prolonged contact, lead to long-term structural changes (Jafarova, 2021; Freeman et al., 2022; Cherciov, 2011).

An additional challenge is the cognitive aspect of interlingual interference. In bilinguals, the L1 and L2 language systems are partly integrated and can be activated at the same time, creating conditions that both facilitate language use and cause conflicts between languages, especially when the linguistic units are similar in form or meaning (Blumenfeld et al., 2022; Lameira et al., 2023). These effects are particularly noticeable in language pairs with high lexical and phonological similarity, such as Spanish-Catalan or German-English, where the simultaneous activation of two language systems increases both helpful and disruptive processes (Gálvez-McDonough, 2025; Vanlangendonck et al., 2020). The outcomes of these processes extend beyond purely linguistic phenomena and can be observed in difficulties with second language learning, ongoing speech errors, and increased cognitive effort, which are especially relevant in clinical and educational settings (Gálvez-McDonough, 2025; Melnyk, 2025).

Modern linguistic and psycholinguistic research views interlingual interaction in bilinguals as a systematic process involving both linguistic and cognitive mechanisms. Most scientific studies assume that bilingualism is a normal aspect of language use, given that a large portion of the world's population speaks two or more languages (Gálvez-McDonough, 2025; Grosjean, 2010). Models of complex systems, built using complex network theory and coordination dynamics, reveal universal principles of coactivation, competition, and inhibition that apply across natural, technical, and social systems (Danziger et al., 2019; Tognoli et al., 2020). Similar logic of component interdependence is also seen in applied engineering research, where adjusting individual system parameters can alter stresses and either suppress or enhance the function of other parts (Shavarskyi et al., 2022). On the cognitive level, these principles are reflected in modern psycholinguistic models of interlingual interaction, which describe bilingual speech as the result of simultaneous coactivation of linguistic representations and their competition, managed through inhibitory mechanisms (Bailey, 2024; Lowe, 2021). Psycholinguistic models consistently demonstrate that bilinguals are in a constant state of coactivation during both language perception and production, creating conditions for both facilitation and interlingual interference during lexical competition (Starreveld et al., 2014).

A separate line of research investigates the role of cognitive control in overcoming interlingual interference (Sabourin & Vīnerte, 2019). Most models include inhibitory mechanisms to handle competition between languages, although the nature and universality of these mechanisms are still debated (Blanco-Elorrieta & Caramazza, 2021). Neurobiological evidence shows a partial overlap between networks involved in linguistic and nonlinguistic interference, emphasizing the general cognitive aspect of interlingual interaction (Mendoza et al., 2021).

Despite extensive theoretical and empirical research on interlingual interaction in bilingualism, some aspects of interference remain poorly understood. Although modern psycholinguistic models confirm that interlingual interference can occur even in highly skilled bilinguals due to the simultaneous activation of two languages, the conditions that amplify or diminish these effects are still not fully defined (Starreveld et al., 2014; Kaliuzhna, 2025). The limited research on language production compared to perception processes, especially regarding false cognates and lexical rivalry, along with the unclear role of cognitive control in overcoming interlingual interference, continue to be central issues (Bailey, 2024; Gálvez-McDonough, 2025). While inhibitory models are popular, findings on the "bilingual advantage" in cognitive control remain debated, emphasizing the need for more precise descriptions of bilingual language profiles using continuous and combined measures of language dominance (van den Noort et al., 2019; Freeman et al., 2022).

The importance of this research comes from the growing interest in how interlingual interaction happens during speech production in bilinguals, especially when two language systems are active at the same time. Although there are several theoretical models of bilingual lexical access, like non-selective activation and inhibitory control, the effect of formal and semantic similarity of words on the speed, accuracy, and stability of speech choices is still debated and requires more empirical research. This issue is particularly relevant as functional bilingualism becomes more common, with the second language often used in educational, professional, and digital settings. The goal of this study is to examine the extent and nature of interlingual interference in bilinguals' language production and to investigate how lexical similarity affects competition between L1 and L2. Specifically, it aims to identify facilitative and interfering effects related to cognates, false cognates, and neutral vocabulary, analyze how linguistic representations are coactivated, and describe the cognitive control mechanisms that assist in selecting the correct lexical item. This research is important because it advances understanding of the non-selective nature of lexical access in bilinguals and provides empirical evidence for the graded level of interlingual competition based on the similarity of form and meaning between languages. The findings will contribute to existing psycholinguistic models by clarifying when coactivation of languages leads to facilitation or interference. The theoretical significance involves comparing experimental data with models of non-selective lexical access and inhibitory control, which helps clarify the dynamic balance between activation and inhibition during speech. The practical relevance includes potential applications in foreign language teaching, development of educational materials for bilinguals, and translation and language training practices, where understanding the interference potential of false cognates and the facilitative role of cognates can improve language learning outcomes.

The motivation for conducting this research comes from the need to empirically clarify how interlingual interference affects the speech production of bilinguals, especially when both language systems are active at the same time. Despite many theoretical models of bilingual lexical access—such as non-selective activation and inhibitory control—the question remains open about how formal and semantic similarities between words in different languages impact the speed and accuracy of speech selection. This calls for further experimental testing on specific language pairs. The goal of this paper is to experimentally explore the nature and strength of interlingual interference in bilinguals during speech production in a second language by analyzing time and accuracy data from a picture naming task that involves different types of lexical similarity. This involves comparing the facilitative and interfering effects of cognates, false cognates, and neutral

vocabulary, and clarifying how cognitive control helps manage lexical competition between L1 and L2.

1.1. Research objectives:

1. To analyze the influence of the type of lexical similarity between languages on the temporal and accuracy indicators of speech production in bilinguals.
2. To identify the specificity of interference and facilitation effects in the processing of cognates, false cognates and neutral vocabulary.
3. To quantitatively assess the degree of lexical competition between L1 and L2 in the picture naming task.
4. To compare the obtained experimental results with the provisions of the models of non-selective lexical access and inhibitory control.

2. LITERATURE REVIEW

In today's world, scientific literature describes interlingual interaction in bilinguals as a multilevel phenomenon that results from the simultaneous operation of two language systems within a single cognitive space (Blumenfeld et al., 2022; Gálvez-McDonough, 2025). Psycholinguistic research consistently supports the idea that language processing in bilinguals involves non-selective activation of lexical representations from both languages, regardless of the linguistic context of the task (Starreveld et al., 2014; Toassi et al., 2023).

Analysis of experimental studies shows that the simultaneous activation of two languages creates both facilitative effects and interlingual interference, mainly at the lexical level (Gálvez-McDonough, 2025; Mendoza et al., 2021). Current scientific research especially highlights the importance of formal and semantic similarity among linguistic units, which impacts the competition between different representations during lexical choice (Vanlangendonck et al., 2020; Vingron et al., 2022). Many studies demonstrate that cognates are associated with shorter reaction times and greater accuracy in language tasks for bilinguals, whereas false cognates and cross-linguistic homographs often cause increased interference because conflicting meanings are activated in both languages (da Silva Gadelha & Toassi, 2022; Gálvez-McDonough, 2025; Toassi et al., 2023).

A separate line of research examines the role of cognitive control in managing interlingual competition, where interference is regarded as a form of conflict in information processing that requires engagement of domain-general inhibition mechanisms (Freeman et al., 2022; Kroll et al., 2021). At the same time, the literature reveals contradictions about the existence of a "bilingual advantage" in cognitive control, which can be explained by differences in research designs, measurement methods, and approaches to classifying language experience (de Bruin et al., 2021; Dentella et al., 2024; Paplikar et al., 2021). Research on bilingual vocabulary development shows that learning a second language often involves transferring native language features, and the level of interference is affected by language dominance and the frequency of use for each language (Chantal et al., 2022; Grose-Hodge et al., 2025). Furthermore, sociocultural context and educational practices play a significant role in shaping interlingual interactions, impacting vocabulary learning and interference (Wei et al., 2024; Medynska et al., 2023). Findings from studies on phonetic and phonological interference support the development of variable "compromise" categories in bilinguals, which are influenced by

age, duration of learning, and individual cognitive strategies (Casillas, 2021; Schmid, 2025; Siow et al., 2025). In educational environments, the value of multilingual approaches and standardized methods for assessing language profiles is emphasized for effectively managing interlingual competition (Sokolova, 2022; Nykyporets et al., 2025).

The limitations of current research include a lack of comprehensive approaches that integrate lexical, grammatical, phonetic, and cognitive aspects of interlingual interaction. Most studies focus on individual levels, which complicates understanding interference processes (da Silva Gadelha & Toassi, 2022; Toassi et al., 2023). The absence of combining empirical data from psycholinguistics, neurocognitive research, and sociocultural analyses creates gaps in developing coherent theoretical models (Dentella et al., 2024; Freeman et al., 2022).

3. MATERIALS AND METHODS

3.1. Methodological basis of the research

This research examined interlingual interference in bilinguals during speech production, focusing on lexical competition and the cognitive mechanisms that control it. The study was carried out as a controlled psycholinguistic experiment using standardized behavioral methods, which allowed for the quantitative measurement of interference effects while selecting second-language lexical units under the simultaneous activation of two language systems.

The study's methodology was grounded in psycholinguistic models of non-selective lexical access, which propose that bilinguals' speech processing involves the simultaneous activation of both languages' lexical representations, regardless of language mode (Bailey, 2024; Gálvez-McDonough, 2025). According to the inhibitory control model of bilingual speech, interlingual interference results from competition between activated L1 and L2 representations, requiring the activation of cognitive control mechanisms—particularly the inhibition of irrelevant language—to manage this (Bailey, 2024; Blanco-Elorrieta & Caramazza, 2021).

The choice of the experimental task was based on lexical access models that emphasize the role of formal and semantic similarities between linguistic units in generating facilitative and interference effects, especially for cognates, false cognates, and cross-linguistic homographs (Toassi et al., 2023). In this study, cognates are defined as lexical units from different languages with a shared etymology and high similarity in both meaning and form. False cognates are words that are similar in form or spelling but have different meanings across languages, potentially causing cross-linguistic interference. Cross-linguistic homographs are characterized by identical or similar written forms with differences in pronunciation and/or meaning (Toassi et al., 2023). Using stimulus materials with varying degrees of formal and semantic similarity allows for measuring facilitative and interference effects in lexical access and naming tasks, which are commonly used in psycholinguistic research on bilingualism (Lowe, 2021; Toassi et al., 2023). Cognitive control was examined as a domain-general mechanism involved in resolving conflicting processing in both linguistic and nonlinguistic tasks (Freeman et al., 2022; Kroll et al., 2021), consistent with neurocognitive evidence of partial overlap between linguistic and nonlinguistic interference networks (Dentella et al., 2024; Mendoza et al., 2021).

The specified methodological approaches guided the selection of an intragroup experimental design, criteria for choosing stimulus material, and indicators for analyzing interlingual interference in speech production.

3.2. The research design and sampling

The research was conducted as a controlled online psycholinguistic experiment with a within-group design, comparing language production markers across different lexical conditions. The main experimental task was a picture naming activity, which is commonly used to study lexical access, language coactivation, and interlingual interference in bilinguals (Mendoza et al., 2021).

Participants were recruited through an open online process during March–April 2025. Advertisements inviting participation in the study were shared via thematic Viber channels dedicated to foreign language learning, bilingualism, and linguistic research. A total of 119 individuals responded to the invitation and completed a preliminary online language profile questionnaire, which was developed based on an adapted version of the Language Experience and Proficiency Questionnaire (LEAP-Q) (Marian et al., 2007) (see Appendix 1). The adapted language profile questionnaire included sections on the age at which each language was learned, how often the language is used in different communication settings, self-assessment of proficiency levels, and language dominance on continuous scales.

The questionnaire data were used to screen participants and form the final sample. At this stage, 46 respondents were excluded for the following reasons: irregular use of the second language (n = 19), dominance of the third language (n = 11), self-rated L2 proficiency below average (n = 9), and technical limitations for conducting the online experiment (n = 7). The final sample included 73 participants (n = 73; 38 females, 35 males) aged 18 to 35 years (M = 24), who met all inclusion criteria. All participants were Ukrainian-dominant bilinguals with Ukrainian as their native language (L1). The second language (L2) for the participants was English (n = 49) or Polish (n = 24), which they actively used in educational, professional, or everyday communication contexts for at least five years. This choice of language pairs was due to their prevalence in the contemporary Ukrainian sociolinguistic space and the presence of both formally similar and potentially interfering lexical items (Wei et al., 2024; Kaliuzhna, 2025).

The inclusion criteria for the study were regular use of Ukrainian and either English or Polish, no diagnosed speech, cognitive, or neurological disorders, normal or corrected vision, and no professional linguistic education that could affect conscious language control strategies.

The experiment was conducted online individually using the Gorilla Experiment Builder platform, which is widely employed in modern psycholinguistic research to gather behavioral data with accurate reaction-time measurement (Anwyl-Irvine et al., 2020). The stimulus set included 90 images representing three lexical conditions: cognates, false cognates, and neutral words. All stimulus images were pre-screened for visual ambiguity and the frequency of the corresponding tokens in both L1 and L2 languages (Fulga & McDonough, 2016; Jakesch et al., 2013).

Participants completed a picture naming task in the target language (L2), with reaction times (ms) and response accuracy recorded. The stimulus presentation order was

randomized for each participant to minimize learning and fatigue effects. A practice phase of 10 stimuli was done before the main task but was not included in the primary analysis. The entire session for each participant lasted about 30 minutes, including instructions, practice, and the main task.

3.3. Data collection and analysis methods

Interlingual interference was evaluated through quantitative behavioral measures in a picture naming task. The primary variables were reaction time (ms) and response accuracy, which are common indicators of lexical access efficiency in bilinguals (Jafari et al., 2025; Jiang, 2013). All responses were automatically recorded via the Gorilla Experiment Builder platform, and audio recordings (.wav) were used to verify correctness and categorize error types (cross-linguistic substitutions, semantic errors, phonological distortions). Initial data processing involved discarding technical failures, missed responses, and responses under 300 ms or over 3000 ms. Accuracy was rated by two independent bilingual experts ($\kappa = 0.89$). For quantitative analysis, descriptive statistics (means, SD) were used for lexical conditions (cognates, false cognates, neutral vocabulary), and linear mixed-effects models were employed to account for fixed effects of conditions and random effects of participants and stimuli (Freeman et al., 2022; Kroll et al., 2021). Statistical analyses were performed in R 4.3.1, utilizing the lme4 and emmeans packages, with a significance level set at $p < 0.05$.

3.4. The research limitations

The sample included Ukrainian-dominant bilinguals with English or Polish as their second language, which limits its applicability to other language pairs or types of bilingualism. The online format of the experiment did not allow for complete control of conditions (noise, microphone, internet), although data cleaning procedures minimized the impact on reaction time. The assessment of language experience was based on self-report, which may have subjective errors, but the adapted questionnaire and clear inclusion criteria improved the relevance of the sample. The research relied solely on behavioral indicators without neurophysiological verification, which restricts the direct identification of cognitive control mechanisms.

4. RESULTS

The results of the experimental picture naming task revealed consistent differences in the timing and accuracy of speech production depending on the type of lexical similarity between languages. Analysis of the average reaction times showed that the type of stimulus significantly affects how quickly bilinguals retrieve lexical items when speaking in their second language.

The mean reaction time for cognates was the shortest, at $M = 812$ ms ($SD = 96$), while for neutral vocabulary it increased to $M = 864$ ms ($SD = 104$). The longest reaction times were observed with false cognates, with a mean of $M = 941$ ms ($SD = 118$). Thus, processing cognates was associated with faster speech production, whereas false cognates caused a clear interference effect, as shown by a significant slowdown in responses. Linear mixed models confirmed a significant effect of lexical similarity type on reaction time ($\chi^2(2) = 46.87$; $p < 0.001$). Pairwise comparisons showed that the difference between cognates and neutral vocabulary was statistically significant ($\Delta M = 52$ ms; $p < 0.01$), and

the difference between neutral vocabulary and false cognates was even more pronounced ($\Delta M = 77$ ms; $p < 0.001$). The largest difference was between cognates and false cognates ($\Delta M = 129$ ms; $p < 0.001$), indicating a distinctly different effect on speech production (Figure 1).

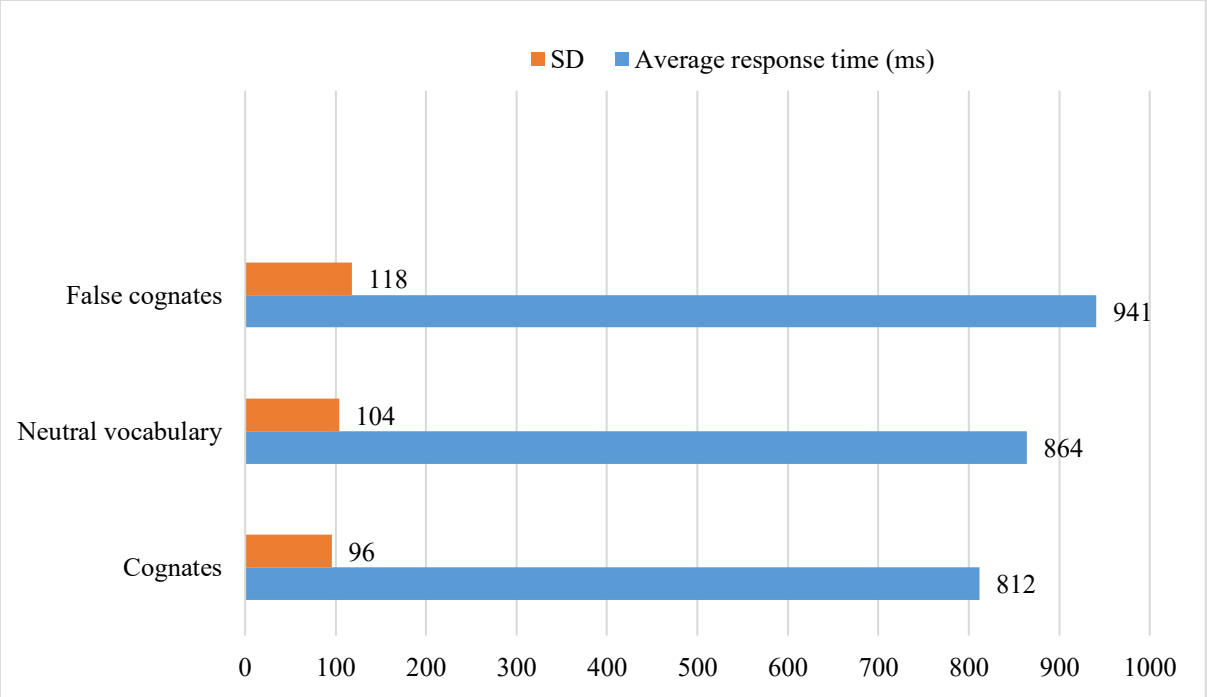

Figure 1. Mean reaction time (ms) in the picture naming task for different types of lexical similarity (with standard deviation errors)

The analysis of response accuracy also demonstrated dependence on the type of lexical stimulus. The highest accuracy was seen with cognates—94.6%—while neutral vocabulary reached 91.2%. Conditions involving false cognates had the lowest accuracy at 84.8%, indicating more errors when units are formally similar but semantically different. Statistical comparisons showed significant differences between conditions ($\chi^2(2) = 39.14$; $p < 0.001$). The accuracy difference between cognates and neutral vocabulary was moderate yet statistically significant ($p < 0.05$), while the false cognates condition significantly differed from both other stimulus types ($p < 0.001$). Detailed measures of mean reaction times and response accuracy for each lexical condition are provided in Table 1.

Table 1. Average values of reaction time and accuracy of responses in the picture naming task, depending on the type of lexical similarity

Type of stimulus	Reaction time, M (SD), ms	Accuracy, %
Cognates	812 (96)	94.6
Neutral vocabulary	864 (104)	91.2
False cognates	941 (118)	84.8

Analysis of the error distribution revealed that, in the case of false cognates, interlingual semantic substitutions were the main type, with participants either producing a word from L1 or choosing an L2 lexeme that's semantically related to the stimulus form but not matching its meaning. For neutral vocabulary, errors mainly involved phonological distortions or delays with self-correction, while in the case of cognates, the number of incorrect responses was minimal and did not follow a consistent pattern. The results indicate that the degree of lexical similarity between languages greatly affects both the speed and accuracy of speech production in bilinguals. The facilitative effects observed for cognates and the strong interference effects seen with false cognates quantitatively reflect the level of lexical competition between L1 and L2 during simultaneous activation of both language systems.

An in-depth analysis of the experimental data helped us understand the nature of facilitative and interference effects that occur during speech production in a second language, depending on the type of lexical similarity. Comparing time and accuracy measures showed that these effects vary both in magnitude and in type. The facilitative effect of cognates manifested as a decrease in average reaction time and reduced variability within individuals. The distribution of reaction times for cognates was more tightly clustered, as indicated by lower standard deviations. Most participants responded consistently to cognate stimuli with few pauses or self-corrections, suggesting coordinated activation of lexical representations in both languages and easier selection of L2 target items.

The interference effect of false cognates, on the other hand, was clearly multidimensional. Besides a significant increase in reaction time, this condition also resulted in more incorrect and partially correct responses, often with delays or self-corrections. Analysis of the audio recordings showed that about 41% of errors in this condition involved brief pauses before speech, indicating increased difficulty in lexical selection. Neutral vocabulary displayed intermediate effects: response times were more stable than with false cognates but did not reach the facilitation seen with true cognates. Errors in this condition were mostly nonsystematic, related to phonological realization or delays in retrieving the correct lexical item.

To measure the effects, the difference in average reaction times between conditions was calculated. The facilitatory effect of cognates compared to neutral vocabulary was, on average, 52 ms, while the interference effect of false cognates was 77 ms. Therefore, the interference effect was stronger than the facilitatory effect, showing the asymmetric influence of different types of lexical similarity on speech production.

Further analysis of response accuracy showed that, in the case of cognates, interlingual and intralingual errors happened less often. However, for false cognates, the highest rate of interlingual substitutions was seen among all conditions. A comparison of individual participant profiles revealed a consistent pattern: responses to cognates were quicker, while responses to false cognates were slower, despite some changes in interference levels. The results clearly distinguish between facilitative and interfering effects in bilingual speech production: cognates help and stabilize lexical access, while false cognates increase interlingual competition, which leads to longer response times and lower accuracy.

The research also calculated overall indices of competition between L1 and L2 based on timing and accuracy measures of speech production. The time competition index (now –

TCI) was defined as the difference in average reaction times between conditions with interference potential and neutral vocabulary: positive values were interpreted as increased lexical competition, while negative values indicated facilitation. Results showed that for false cognates, the TCI was on average +77 ms, while for cognates, a facilitative effect was observed (–52 ms), indicating the highest level of temporal competition occurs in conditions of formal similarity without semantic match. At the same time, the accuracy competition index (now – ACI) was calculated, reflecting a decrease in the percentage of correct responses compared to the neutral condition. The largest decrease in accuracy was seen with false cognates (-6.4%), whereas for cognates, it was minimal (-2.0%) and not consistent. This suggests that interlingual competition in the case of false cognates impacts not only speed but also the correctness of lexical choices.

For a general assessment, an overall index of lexical competition (hereafter, ILC) was created by combining standardized values of TCI and ACI. The highest ILC values were observed for false cognates, intermediate for neutral vocabulary, and the lowest for cognates, indicating the dominance of facilitative processes. The overall indices are presented in Table 2.

Table 2. Indices of lexical competition depending on the type of lexical similarity

Type of stimulus	**Time competition index, ms**	**Accuracy competition index, %**	**Integral index of lexical competition**
Cognates	–52	–2.0	Low
Neutral vocabulary	0	0	Medium
False cognates	+77	–6.4	High

The visualization of the integral index of lexical competition clearly illustrates the asymmetric nature of interlingual interaction: the interference effects of false cognates greatly exceed the facilitatory effects of cognates in strength (Figure 2).

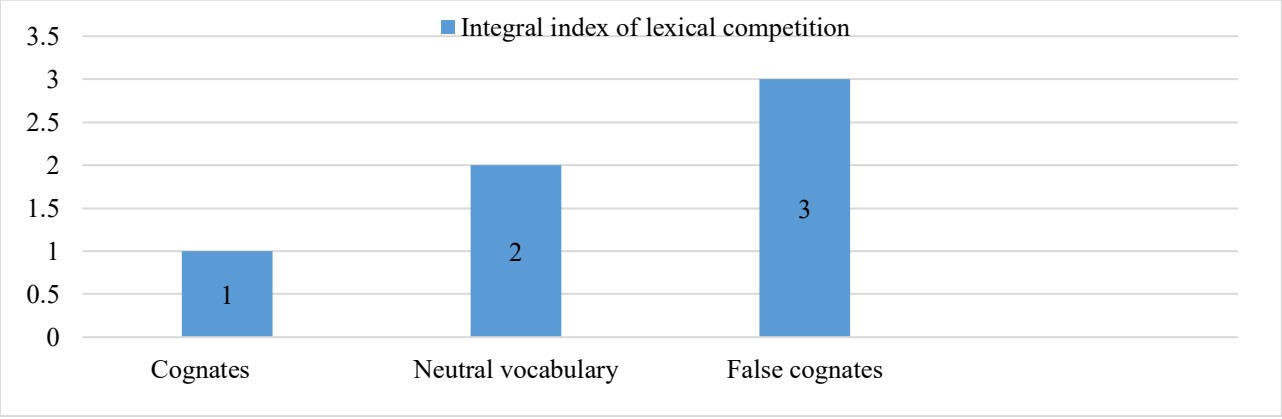

Figure 2. Integral index of lexical competition for different types of lexical similarity (1 – low; 2 – medium; 3 – high)

The quantitative assessment of lexical competition confirms its gradated nature and dependence on the ratio of formal and semantic similarity between lexical units L1 and L2. False cognates create conditions for maximum competition between language systems, which leads to significant time delays and decreased accuracy. Conversely, cognates help reduce conflict and stabilize lexical access. The obtained index indicators summarize the experiment results and quantitatively describe the intensity of interlingual interaction in bilingual speech production, demonstrating the variability in the balance of facilitation and interference based on the type of lexical similarity.

5. DISCUSSION

The results from the research indicate the systemic nature of interlingual interaction in bilinguals' language production and align with modern psycholinguistic models of bilingual lexical access. The observed interference effects can be explained by approaches suggesting that the lexical representations of L1 and L2 are activated simultaneously, with their interaction shaped by a balance of facilitation and competition depending on the type of lexical similarity. Analyzing temporal, accuracy, and index indicators shows that processing second language lexical items occurs when both language systems are coactivated. Notably, the facilitatory effects of cognates—evident in reduced reaction times, increased accuracy, and response stability—suggest the presence of shared or closely related conceptual-semantic representations in the bilingual lexicon. These findings support previous studies considering cognates as a factor that reduces interlingual competition and facilitates language production (da Silva Gadelha & Toassi, 2022; Gálvez-McDonough, 2025). The consistent responses in the cognate condition indicate that coactivation of lexical items from both languages may serve a facilitative role, promoting more efficient language production. This aligns with the idea that interlingual interference is not a uniform phenomenon and can be both restrictive and supportive, depending on the structure of lexical similarity (Mendoza et al., 2021; Toassi et al., 2023).

In contrast, the results for false cognates and interlingual homographs reveal a pattern of increased lexical competition. The longer reaction times, lower response accuracy, and more interlingual substitutions demonstrate the need to actively suppress irrelevant representations of the non-target language. These effects align with findings from experimental studies that view false cognates and homographs as sources of conflicting meaning activation in two languages (Poort & Rodd, 2022; Vingron et al., 2022; Toassi, 2023). The presence of pauses, self-corrections, and partially correct responses in this condition suggests the involvement of cognitive control mechanisms to resolve lexical conflicts. These observations support the idea of linguistic control in bilinguals as a continuous process of managing interlingual competition by inhibiting irrelevant items (Kroll et al., 2021). In this context, interlingual interference can be considered a type of cognitive conflict that involves domain-general monitoring and control mechanisms (Popovych et al., 2021; Freeman et al., 2022).

The strength of interference effects depends on the ratio of formal to semantic similarity between languages. When semantic congruence exists, facilitative processes tend to dominate, whereas in cases of semantic inconsistency or conflict, the demand on inhibitory mechanisms increases. These dynamics align with current ideas about the adaptive nature of language control, which relies on the characteristics of the language material and communication needs (Beatty-Martínez et al., 2020). Neutral vocabulary represents a situation with relatively low levels of interlingual competition, indicating a

lower burden on regulatory mechanisms when there is no formal or semantic similarity. At the same time, the ongoing presence of background interlingual interaction even in this case confirms that lexical access in bilinguals is not entirely selective (Bonfieni et al., 2019; Gálvez-McDonough, 2025).

In a broader theoretical context, the results emphasize the adaptive nature of language control and how language experience impacts interlingual competition. Simultaneously, interpreting the data requires recognizing the study's limitations, such as the specifics of the language pairs, the online format of the experiment, and the exclusive use of behavioral indicators. From a practical standpoint, the findings can be used in teaching foreign languages to enhance work with cognate vocabulary and reduce the risks of interference from false cognates.

6. CONCLUSIONS

The research findings show that the type of lexical similarity between languages greatly affects the speed of speech production in bilinguals: cognates facilitate faster and more stable lexical access, while false cognates lead to slower responses and more errors. The accuracy results follow a similar pattern: the highest percentage of correct answers was for cognates—94.6%—and the lowest for false cognates, at 84.8%. Examining pauses, self-corrections, and response variability reveals active cognitive control in managing interlingual competition.

This research's novelty lies in the quantitative and qualitative analysis of facilitative and interference effects, as well as in confirming the systemic nature of coactivation of linguistic representations. The practical importance of the data is demonstrated by its potential to influence how vocabulary interference is addressed in foreign language teaching and translator training. Limitations include the specific language pair, a small sample size, and the exclusive reliance on behavioral indicators. Future studies could increase the sample size, examine different types of bilingualism, and combine behavioral and neurocognitive methods for a deeper understanding of interlingual interaction. Furthermore, they could investigate how language experience, dominance, and communicative contexts shape the adaptive regulation of language control.

ETHICAL STATEMENT

The research followed international ethical standards. Participants provided informed consent and could withdraw at any time without facing any negative consequences. No personal information was collected. Results remained anonymous, audio recordings were used only for scientific analysis and stored securely with restricted access.

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APPENDIX 1

The research participant language profile questionnaire

(an adapted version of the LEAP-Q for studying interlingual interference in speech production)

1. General information
1.1. Age (full years): _____
1.2. Gender:
a) female
b) male
c) other / do not wish to specify
2. Language status
2.1. Your native language (L1): _____
2.2. A second language (L2) that you use regularly:
_____
2.3. Do you speak other languages (L3, L4, etc.)?
a) no
b) yes (specify language(s): _____
3. Order and age of language acquisition
Fill in for each language you speak.
3.1. Age of language acquisition onset:
– L1: _____ years
– L2: _____ years
– L3 (if available): _____ years
3.2. Age at which you were able to communicate fluently in this language:
– L1: _____ years
– L2: _____ years
– L3 (if available): _____ years
3.3. Age when you started reading in this language:
– L1: _____ years
– L2: _____ years
– L3 (if available): _____ years
4. Frequency of language use
Estimate the approximate percentage of use of each language in the different communicative domains (the sum should be 100%).
4.1. Everyday communication:
– L1: ____ %
– L2: ____ %
– L3: ____ %
4.2. Educational context:
– L1: ____ %
– L2: ____ %
– L3: ____ %
4.3. Professional activity:
– L1: ____ %
– L2: ____ %
– L3: ____ %

4.4. Digital communication (social networks, messengers):
– L1: ____ %
– L2: ____ %
– L3: ____ %
5. Language dominance

5.1. Which language do you consider dominant at the moment?
a) L1
b) L2
c) roughly equal

5.2. Has your language dominance changed throughout your life?
a) no
b) yes (briefly describe):_____
6. Self-assessment of language proficiency
Rate each skill on a scale from 0 to 10, where 0 means I don't know it at all, 10 means I know it perfectly.
6.1. Language L1

Skill	0	1	2	3	4	5	6	7	8	9	10
Understanding spoken language											
Speaking											
Reading											
Writing											

6.2. Language L1

	0	1	2	3	4	5	6	7	8	9	10
Skill											
Understanding spoken language											
Speaking											
Reading											
Writing											

7. Experience in a language environment (L2)

7.1. Have you lived in a country where L2 is the main language of communication?
a) no
b) yes (specify total duration: ____ years ____ months)

7.2. Have you studied in an educational institution using L2 as the language of instruction?
a) no
b) yes (specify total duration: ____ years ____ months)
7.3. Do you use L2 in your professional activities?
a) no
b) yes (specify total duration: ____ years ____ months)
8. Medical and cognitive factors

8.1. Do you have a diagnosed speech, cognitive or neurological disorder?
a) no
b) yes (specify):_____

8.2. Do you have a visual or hearing impairment (corrected or uncorrected)?

a) no
b) yes (specify):_____
9. Additional information

9.1. Do you have a professional linguistic education?
a) no
b) yes
9.2. Is there any other information about your language experience that you consider relevant to the research?
_____

Language, Mentality, and Digital Mediation: Phraseological Units in the Context of Globalized Online Communication

Lenguaje, mentalidad y mediación digital: unidades fraseológicas en el contexto de la comunicación globalizada en línea

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Abstract

The article examines how the linguistic representation of the world serves as a central concept in modern linguistics, reflecting national worldviews and the cultural and psychological characteristics of a people. It emphasizes the connection between the linguistic depiction of the world and phraseological systems across various languages, since phraseological units most vividly express ethnocultural specificity, mental stereotypes, and value orientations of native speakers. The study reviews theoretical approaches to defining the concept of the "linguistic picture of the world" in the works of Ukrainian and international linguists, as well as the mechanisms behind its development at the level of national consciousness. A comparative analysis of Ukrainian and English phraseological units is conducted to identify universal and culture-specific elements within the linguistic picture of the world. The findings indicate that universal phraseological units reflect shared human concepts related to morality, labor, nature, and family values, while culturally specific units encode distinctive features of historical experience, geographical conditions, traditions, and lifestyles. Phraseology is highlighted as a cultural "mirror" that reveals symbolic meanings and cultural codes. The results deepen the understanding of language as a tool for shaping and representing worldview structures and support intercultural communication and comparative linguistic research.

Keywords: Ukrainian language teacher by professional orientation, business Ukrainian language, culture of Ukrainian business language, linguistic picture of the world, English

phraseological units, native speakers of English, national culture, worldview, linguoculturology, intercultural communication.

Resumen

El artículo examina la imagen lingüística del mundo como categoría clave de la lingüística moderna, que refleja las cosmovisiones nacionales y las características culturales y psicológicas de un pueblo. Se presta especial atención a la relación entre la imagen lingüística del mundo y los sistemas fraseológicos de distintas lenguas, ya que las unidades fraseológicas transmiten de manera más vívida la especificidad etnocultural, los estereotipos mentales y las orientaciones de valor de los hablantes nativos. El estudio analiza los enfoques teóricos para definir el concepto de "imagen lingüística del mundo" en las obras de lingüistas ucranianos e internacionales, así como los mecanismos de su formación en la conciencia nacional. Se lleva a cabo un análisis comparativo de las unidades fraseológicas del ucraniano y del inglés, con el fin de identificar componentes universales y específicos de cada cultura en la imagen lingüística del mundo. Los resultados demuestran que las unidades fraseológicas universales reflejan conceptos humanos compartidos relacionados con la moral, el trabajo, la naturaleza y los valores familiares, mientras que las específicas de cada nación codifican rasgos distintivos de la experiencia histórica, las condiciones geográficas, las tradiciones y los modos de vida. Se destaca la fraseología como un "espejo" cultural a través del cual se revelan significados simbólicos y códigos culturales. Los resultados profundizan la comprensión del lenguaje como medio de configuración y representación de las estructuras de la cosmovisión y contribuyen al desarrollo de la comunicación intercultural y de los estudios lingüísticos comparativos.

Palabras clave: orientación profesional del docente de lengua ucraniana, lengua ucraniana de los negocios, cultura del lenguaje empresarial ucraniano, imagen lingüística del mundo, unidades fraseológicas del inglés, hablantes nativos de inglés, cultura nacional, cosmovisión, lingüoculturología, comunicación intercultural.

1. INTRODUCTION

Phraseological units are often considered some of the most difficult elements to translate because of several factors. When a word becomes part of a phraseological unit, it usually loses its individual meaning and gains a new, context-dependent or "connected" sense. Therefore, translating such fixed expressions requires more than just looking up each part's meaning in a dictionary. The main challenge comes from the need to find an equivalent in the target language or, alternatively, a suitable match. However, even if an equivalent exists, it may still be necessary to find other ways to convey the intended meaning, since the current phraseological unit might not fit the specific context. Additionally, it's important to consider any evaluative connotations associated with the expression during translation. As a result, understanding and applying effective translation strategies are essential when working with phraseological units. This ensures a more accurate and contextually appropriate translation of the original material, emphasizing the importance of further research in this area.

Most phraseological units are not translated into other languages, which means that each nation and culture express their own character, everyday imagery, and symbolic

structures through them. It is within phraseology that the memory of national historical events, customs, folk wisdom, and humor is preserved. The dependence of a linguistic unit's meaning on the era's nature, the cultural perspectives on how the world is perceived, historical development, and an individual's understanding of the world is undeniable. In this way, linguistic meanings can be seen as a type of information about the surrounding reality and our perception of it, stored in the social memory of the cultural and linguistic community, and representing the spiritual heritage of generations.

Each nation has a distinct system of values, traditions, and character that set it apart from other ethnic groups, and these are embedded in the phonetic, morphological, lexical, and syntactic levels of the language. These elements reflect a nation’s worldview, creating a unique picture of the world's language.

Phraseological units can be seen as more representative symbols in linguoculturology, which exists at the crossroad of linguistics and cultural studies. They examine both historical and modern expressions of a people's culture, reflected and solidified in language. The importance of studying phraseology as a universal mechanism and understanding its conceptualization in modern language theory is driven by the increasing role of stable units in speakers' discourse across different languages. This is especially important for teachers of Ukrainian language in professional and business contexts, emphasizing speech culture (Wierzbicka, 1996; Wierzbicka, 1999).

During the research process, a set of methods was used for a thorough analysis of the material. Specifically, the deduction method helped draw general conclusions from specific observations; the comparative method was used to compare linguistic units in German and Ukrainian texts; and the descriptive method helped characterize the structural and semantic features of these units in the selected languages.

The purpose of the article is to compare the linguistic worldviews of English and Ukrainian from the perspective of phraseology.

2. LITERATURE REVIEW

The issue of how language perceives the world is discussed in the works of many scholars: Black, Weisgerber, Wierzbicka, Golubovskaya, Humboldt, Dzyuba, Muromtsev, Nelyuba, Himes, and others. The “conceptual picture of the world” forms the foundation of Humboldt's ideas, who introduced the concept of language as anthropocentric and argued that natural language reflects a unique worldview that is specific only to it, unlike others. By naming individual objects, it creates a general picture for human consciousness. This thesis clarifies the connection between language and thought, as the results are embedded in linguistic concepts and cognitive categories.

Thus, Spears discussed the idea of a subjective factor in language. Spears observed that an individual perceives the world in only a certain way because, during the interpretation of realities, our choices are influenced by how language can establish associations. Therefore, human knowledge about the world is shaped by the linguistic picture of reality (Spears, 2000).

The concept of the linguistic picture of the world was first introduced in Wierzbicka's work. According to her perspective, language influences how ethnic groups perceive and interpret reality. This results in different understandings of certain phenomena, as the

existence of many languages leads to various interpretations. In line with nominal definitions, the linguistic picture of the world refers to the collective set of ideas about reality that have been historically ingrained in people's consciousness and are expressed through the phonetic, morphological, lexical, and syntactic levels of language (Knowles, 2009; Wierzbicka, 1996; Wierzbicka, 1999). The linguistic representation of the world is most evident at the lexical level, especially in fixed expressions. This is a key focus for educators teaching Ukrainian in a professional setting and those specializing in business Ukrainian within the framework of speech culture.

Phraseologisms and idioms in English are connected to cultural ideas and traditions, and they preserve important historical information. Based on this, we will try to discuss the equivalents of these fixed expressions in English and Ukrainian, examining their origins.

Phraseologisms are a vital part of language that speakers constantly use, and fixed expressions can appear in both spoken and written communication. Therefore, if authors interpret the term “conceptualization” as “the process of the birth of concepts,” they may face the issue of whether the emergence of concepts can be described similarly within culture, everyday consciousness, and the individual artistic consciousness of the author.

The linguistic view of the world is seen as a mosaic-like cultural landscape made up of interconnected linguistic elements. These elements, through a complex interaction of sounds, lexical and grammatical meanings, and stylistic features, reflect a fairly objective picture of both the environment and an individual's inner world. Ultimately, this creates a comprehensive model or representation of the world itself (Karaban, 2003).

Atanasova describes the "linguistic picture of the world” as the verbal expressions and interpretations created by language communities to understand their environment and their place within it. He emphasizes that this picture of the world essentially reflects both an individual's worldview and the collective perspective of an ethnic group. It is formed by how people perceive and interpret their surroundings, ultimately expressed through language. Through human interaction with reality, a dynamic relationship develops among individuals, the universe, and their language, creating an interconnected system where all elements are linked (Havrylova & Atanasova, 2020).

Havrylova introduces the concept of the “mental lexicon of language," which describes not an individual's awareness but how an entire community of speakers interprets the real world (Havrylova & Atanasova, 2020).

Although phraseology has been extensively studied in both English and Ukrainian, methods for translating phraseological units still need further research. English phraseological units that include a person’s name based on their profession deserve special attention. Analyzing how these are conveyed in Ukrainian will significantly improve translation quality (Savchenko, 2022; Altohami, 2020; Yizhakevich, 1971).

In summary, the authors view the linguistic perspective of the world as a unique, national collection of knowledge about the world, stored in the specific structure of vocabulary, phraseology, and grammar of a particular language. Ammer argued that “in each natural language there is a view of the world that is characteristic only for it. Every language, denoting individual objects, actually creates: it forms a picture of the world for the people who are its bearers” (Ammer, 1997).

Regarding structure, for example, Havrylova and Atanasova examine the linguistic worldview (MKS) within the framework of the "domovna picture of the world," where the basic unit is seen as a concept, the "conceptual picture," with the core being a concept, and the "linguistic picture," where the core is the meaning of the linguistic sign. The relationships among these three levels of the worldview are illustrated. The ISS is also analyzed in terms of its dynamics and its significance in shaping the nation's intellectual landscape (Havrylova & Atanasova, 2020).

3. MATERIAL AND METHODS

The issue of national mentality is becoming increasingly important today for study across different sciences. Since elements of national worldviews are expressed through language, the authors point out that national customs and traditions, embedded in language, create a moral and spiritual unity that helps preserve and develop both ethnicity and cultural heritage. National culture is mainly reflected through unique forms of self-organization, different from those of other societies. It includes the products of a people's linguistic and intellectual efforts, a system of shared public and spiritual values, and the collective relationship of that nationality with its environment. It also shows interactions among individuals within the group and their connections with other nations (Altohami, 2020; Buşilă, 2018; Yizhakevich, 1971).

Phraseologisms, whose figurative roots have a long-standing tradition, establish a dual connection with culture: their external form already serves as the language of culture, and additionally, this image is understood and interpreted by speakers based on their cultural knowledge. Therefore, phraseologisms communicate cultural information about the world and society either directly (through their denotative meaning) or indirectly (by linking the associative-figurative basis with standards, symbols, and stereotypes of the national culture). As a result, phraseological units act as a kind of reservoir of the people's wisdom, preserving and passing on the mentalities and culture of the people from generation to generation.

Current understanding of the issues related to the conceptualization and categorization of reality is seen as a crucial task for both cognitive science and language theory. In language theory, the term "conceptualization" mainly pertains to the process of organizing knowledge, emphasizing units of human experience in their meaningful representation (Loboda, 2019; Mitchell, 2007; Spears, 2000). The anthropocentric focus of 21st-century linguistics largely shapes the main priorities of the science of language. The connection between an individual's existence and various historical, cultural, ethical, aesthetic, and moral aspects of being and activity plays a central role in guiding language toward the individual.

Using the concept of a idea (represented through phraseology), it becomes possible to identify and describe differences in the figurative worldview of various peoples. This approach can also, to some degree, reveal the connection between thinking patterns and the unique way each ethnic group interprets reality. As is widely known, language reflects specific features of extralinguistic reality that are inherent to a particular cultural space (Baran et al., 2008; Havrylova & Atanasova, 2020; Karaban, 2003).

The dependence of a linguistic unit's meaning on the era, worldview, historical background, and human understanding of the world is undeniable. In this context,

linguistic meanings can be seen as a type of information about the surrounding reality and our knowledge of it, stored in the social memory of the cultural-linguistic community and representing the spiritual heritage of both current and future generations. These linguo-cultural aspects are crucial for specialists to consider when teaching a course in business Ukrainian, especially when focusing on idioms and their translation. Although language is fundamentally connected to the same world, differences in its semantic system emerge from many factors, including extralinguistic ones such as varied individual experiences of the same reality. This variation shows up in differences in the lexical and grammatical naming of phenomena and processes, as well as in the etymology of certain concepts (Loboda, 2019; Mitchell, 2007; Spears, 2000).

Terminological vagueness and ambiguity in scientific works can sometimes obscure the core of a specific linguistic or speech paradox being described. Therefore, clarifying and concretizing the fundamental concepts and terms used in building scientific theories, concepts, and hypotheses is an urgent task for the overall theory of language (Altohami, 2020; Gavrylova & Sadovska, 2019; Spears, 2000).

Concepts relate to cultural codes, which are seen as the “grid” that culture “casts” on the surrounding world, dividing, categorizing, structuring, and evaluating it. Cultural codes connect with ancient archetypal representations of humans, solidifying them (Spears, 2000; Mitchell, 2007; Knowles, 2009).

The concept of worldview is based on studying a person’s ideas about the world. If the authors recognize that the world is a person and their environment, then the worldview results from processing information about both. The worldview of each nation or ethnic group is shaped by universal concepts like time, space, cause, change, quantity, and quality. These concepts are expressed through language as a system of symbols, and studying different national languages shows that various peoples interpret and explain reality differently, heavily influenced by religious and social factors, as well as their living conditions, customs, traditions, and way of life (Spears, 2000; Mitchell, 2007; Knowles, 2009).

4. RESULTS

Let's explore the challenges of translating idioms, using Ukrainian and English as examples, which pose difficulties for teachers, including those teaching business Ukrainian, especially in terms of speech etiquette. For instance, in English speech, one might say *"it's raining cats and dogs"* (literally translating to “*it's raining cats and dogs*”*)*, which in Ukrainian can be expressed with a similar idiom: "it's pouring like a bucket." According to the dictionary of phraseological units in English, the origin of the expression *"it's raining cats and dogs" is* closely linked to drainage issues in European cities during the 17th-18th centuries, when heavy rains caused sewers to overflow, leading to the appearance of various objects and debris—including animal carcasses—on the streets. When people observed the aftermath of thunderstorms, they noted animals lying in the open air on the streets (Mitchell, 2007; Ammer, 1997; Knowles, 2009).

Here's another notable example of stable word combinations related to weather: *steal one's thunder* (literally translated as “*to steal someone's thunder*”*)*. In Ukrainian, similar phraseological expressions might be: *to steal someone's idea; bask in the rays of someone else's fame.* The origin of the idiom *steal one's thunder* dates back to the 18th century,

when various devices like lead balls were used in theaters to create sound effects; this was how the thunder effect was produced: *Damn them! They will not let my play run, but they steal my thunder!* (*Damn it! They won't let my play be staged, but they're stealing my thunder!)* (Ammer, 1997).

Cuisine plays a vital role in English culture, so the language's phraseological resources are filled with stable expressions involving the names of products. It is well known that pudding is a traditional English dish, often prepared with meat or fruit fillings and served during Christmas. The significance of this dish in English culture is undeniable, which is why the expression holds a prominent place in the linguistic worldview: *"The proof of the pudding is in the eating"* (literally, "*The proof of the pudding is in the taste*"*)*, which in Ukrainian can be translated as *"it is better to see once than to hear a hundred times.*" The Oxford Dictionary states that the origins of this idiom trace back to the 14th century. It is noted that medieval pudding was not a dessert as we know it today; instead, minced meat with dried fruits served as the filling (Ammer, 1997).

Tea is an important part of American culture, and the tea ceremony helps people relax, unwind, connect with others, and share important information. That's why everyone has a favorite type of tea or a preferred cup of tea: their "cup of tea," meaning something or someone they enjoy and that brings them pleasure. For example, the expression "reading is my cup of tea" can be literally understood as "reading is my favorite activity," showing that reading is a hobby.

At the beginning of the 20th century, the expression "a cup of tea" had a positive meaning and was associated with acceptability and meeting expectations: *He may be a bit hot-tempered and impulsive... but otherwise, it's simply impossible not to like him. Sally responded that Fenwick was a cup of tea* (*He may be a bit hot-tempered and impulsive… but on the other hand, he just can't help but be likable. To this, Sally replied that Fenwick was wonderful; she liked him)* (Spears, 2000).

In modern English-speaking society, the expression "*my cup of tea*" has taken on a negative connotation, with the phrase "*not my cup of tea*" (literally meaning "*not mine a cup of tea*"*)* becoming common. In Ukrainian, similar phrases include *not my horse, not mine, " and " unpleasant to me.* This idiom gained its negative meaning during World War II thanks to "Sheets from a Military Notebook" correspondent, who explained: *You don't say someone gives you a pain in the neck. You just say,* "*He's not my cup of tea*" (*… they don't say that someone is bothering you. They just note that I don't like him)* (Spears, 2000).

In English phraseology, authors can identify cases where a fixed compound containing a component-name of a person by type of activity has multiple meanings and belongs to several synonymous series. For example, the expression to come the quarterdeck over one, which means "to command someone," is synonymous with the compound to come the old soldier over one. Additionally, this phraseological unit can be part of another synonymous series with the meaning "to fool," along with compounds like to put the doctor he, that play the traveler, etc. These examples demonstrate that when new words emerge in a phraseological unit, new synonymous series can form, creating challenges in translation, especially into Ukrainian. Phraseological antonyms provide a contrasting evaluation of a phenomenon or object; they are characterized by opposing semantics or the opposition "phraseology – phraseology" (Havrylova & Atanasova, 2020). There can be defined antonymic phraseology that includes the names of persons by type of activity

and is also divided into those that partially overlap in structure but contain components with opposite meanings, and those that differ entirely in structure, and thus in their internal content and image. The first group may include expressions like *good sailor – bad sailor* ("a person who is good at – badly tolerates sea duty"). In some cases, lexemes can acquire the opposite meaning within the structure of a stable compound, especially in the names of persons by type of activity: *judge, pastor – hatter, weaver* (*(as) sober as a judge* (or *a parson) – (as) mad as a hatter*/*as a weaver)*. In this context, the distinction emphasizes the difference between mentally healthy and insane individuals.

The second group of antonymic pairs, which hardly overlap in component makeup and therefore in their figurative internal forms, includes the following expressions: *a square shooter* [20, p. 883] – *knight of fortune* ("an honest, decent person is an adventurer"); *(as) fit like a pudding for a friar's mouth – as much use for it as the Queen has for a yield-hook* [20, p. 58] ("what is necessary is something unnecessary"); *curb* (or *kerb) merchant* [20, p. 250] – *merchant prince* [20, p. 671] ("small – large merchant"), etc.

Difficulties in translating phraseological units that include a component representing a specific profession or occupation arise from features such as imagery, expressiveness, conciseness, and aphorism. This is especially true when working with these stable structures. It is essential to consider not only linguistic details but also cultural and national traits, along with the historical and traditional context of the original language. In translation studies, common methods for conveying phraseological units include full and partial equivalents, analog translation, tracing, and descriptive translation.

The authors emphasize that selecting exact equivalents is feasible when there are parallelisms in both English and Ukrainian. The examined units share similar lexical content, meaning, imagery, grammatical structure, and stylistic tone: *the prince of darkness – king* (*prince) of darkness* (biblical origin in both languages); *master of the situation – master of the situation*; *A workman is known by this work – recognize the master at work*; *your obedient servant – your humble servant; Like priest, like people – like a priest, so is his parish.*

5. CONCLUSIONS

Analysis of the linguistic worldview in English and Ukrainian phraseology reveals many patterns that explain the different historical and cultural experiences of Ukrainians and English speakers, which are reflected in the language. A person creates a mental image of the world as the foundation of their life, forming a representation of the real world—a model used as a tool for orientation in the surrounding environment. However, this perception of the world remains relevant only as long as the individual addresses specific tasks; to solve other life issues, the picture is adjusted or modified. Therefore, the authors conclude that a person simultaneously owns and carries multiple different worldviews and operates with different models of the world depending on the situation.

Any explanation of the worldview will be inadequate because a person cannot fully understand or gather all the nuances of meaning related to their real life. In this way, the worldview will always remain an incomplete picture.

In modern language theory, many similar concepts and terms are related to phenomena such as "world picture," "linguistic picture of the world," "phraseology in the world picture," "conceptual picture of the world," "scientific picture of the world," and others.

These present a challenge in developing the methodology for teaching business Ukrainian. Each new linguistic research approach makes its own adjustments to the interpretation and understanding of these concepts as new objects of knowledge are examined from different perspectives and based on different principles. Linguistic pictures of the world are built upon the foundation of national culture, making the issue of cultural identity relevant. This issue is especially important for a Ukrainian language teacher specializing in business Ukrainian, particularly when working with phraseological units across different languages.

Phraseological units that include a person's name by occupation need special attention during translation because they are not simple word combinations with arbitrary meanings. Instead, they carry specific integrated meanings, properties, and subtle evaluations. The analysis showed that the translation approach can vary depending on individual cases, as the translator's choice is affected by several factors. These include the context in which the phraseological unit is used, its structure, semantic content, and emotional or expressive tone. Based on the situation and the nature of the phrase, the translator may select a full or partial equivalent, an analogy, a calque, or a descriptive translation. It is also essential that the translator understands the linguistic and cultural features of the original language, demonstrates creativity, and efficiently uses reference sources. Future research should focus on a more detailed analysis of phraseology containing a component that is a person's name by occupation, along with the specific features involved in their translation.

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Language individuality in the age of digital technology

La individualidad lingüística en la era de la tecnología digital

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Abstract

The article offers a detailed analysis of how the digital age has changed the linguistic personality, mainly altering the conditions, strategies, and tools of communication in modern society. Its importance comes from the rapid and widespread adoption of digital technology in almost every aspect of human activity, along with the growing influence of online communication on language use and identity formation. The main goal is to identify the consistent features of the virtual linguistic personality by comparing it with the offline, real-world linguistic personality. To do this, the article uses both theoretical and empirical research in linguistics, examines how methods for studying language and personality have developed, and compares real and virtual linguistic identities. Special focus is placed on the language resources used for self-expression in digital spaces and how individuals present themselves on social media. The findings show that the virtual linguistic personality is highly adaptable, creative, and expressive, developing new communication skills specific to online interactions. At the same time, the real-world linguistic personality also adjusts to the digital environment, forming new models of behavior and interaction. Ultimately, digital communication helps shape a new cultural type that influences and spreads innovative cultural practices.

Keywords: linguistic personality, virtual linguistic personality, language norm, modern literary language, online communication.

Resumen

El artículo presenta un examen exhaustivo de las transformaciones de la personalidad lingüística bajo la influencia de las tecnologías digitales, que han alterado radicalmente

las condiciones, estrategias y medios de comunicación en la sociedad contemporánea. La relevancia de este estudio surge de la rápida y ubicua penetración de la digitalización en casi todos los ámbitos de la actividad humana, junto con la creciente influencia de la comunicación en línea en el comportamiento lingüístico y la formación de la identidad. El objetivo principal es identificar los rasgos invariantes de la personalidad lingüística virtual mediante su comparación con la personalidad lingüística real, fuera de línea. Para lograrlo, el artículo recurre a investigaciones teóricas y empíricas en lingüística, analiza la evolución de los enfoques en el estudio del lenguaje y la personalidad, y realiza una exploración comparativa entre identidades lingüísticas reales y virtuales. Se presta especial atención a los recursos lingüísticos empleados para la autoexpresión en entornos digitales y a los mecanismos de autopresentación en las redes sociales. Los hallazgos demuestran que la personalidad lingüística virtual es altamente dinámica, flexible y creativa, y adquiere nuevas competencias comunicativas propias del espacio en línea. Al mismo tiempo, la personalidad lingüística real se adapta al cronotopo virtual, dando lugar a nuevos modelos de comportamiento e interacción. En última instancia, la comunicación digital fomenta un nuevo tipo cultural que tanto configura como difunde prácticas culturales innovadoras.

Palabras clave: personalidad lingüística, personalidad lingüística virtual, norma lingüística, lengua literaria moderna, comunicación en línea.

1. INTRODUCTION

The rise and expansion of digital technologies have significantly transformed how people connect and communicate. In the digital realm, individuals now have extraordinary opportunities for self-expression, mainly through language, which plays a crucial role in online interactions. Many digital platforms, ranging from social media to niche forums, have become unique spaces for showcasing individuality, where words, phrases, texts, and visual elements serve as tools for self-presentation and signaling social status, group identity, ethnicity, or even as ways to manipulate or craft alternative personas. The anonymity often present online allows people to experiment with different linguistic styles and behaviors, revealing personality traits that might stay hidden in traditional settings. As O. I. Horoshko states, "The Internet space itself has become the embodiment of living human thinking expressed in the form of text, which simultaneously synthesizes graphics, sound, and animation. The Internet, as a new communicative space, makes native speakers think more often about the linguistic means they use. The Internet stimulates human speech creativity. Language becomes a tool for creative self-expression for those who communicate in it" (Horoshko, 2009).

These changes in communication emphasize the need for a comprehensive study of human linguistic expression in the digital environment, especially how individuals construct their own linguistic identity, the dynamics of linguistic behavior, and how technological innovations affect language practices. They also encourage a reevaluation of the concept of "linguistic personality" (Boyd & Pennebaker, 2017). Understanding the role of digital space in shaping and presenting personality linguistically, the influence of new technologies on linguistic activity, and methods of linguistic self-presentation online makes this research valuable. The goal of this study is to identify consistent features of a virtual linguistic personality by comparing it with a real-world linguistic personality.

2. LITERATURE REVIEW

The way personality is expressed through language has been extensively studied in linguistics, particularly within the anthropocentric paradigm that centers on humans as carriers and creators of the mind's view of the world. This research is based on W. von Humboldt's ideas, where language is described as "energy" — the activity of the spirit that shapes a native speaker's worldview. Humboldt noted that language isn't just a tool for communication but also a means of shaping thought and personal perspective. His ideas were expanded by L. Weisgerber, who highlighted the influence of language on shaping both individual and collective worldviews. E. Cassirer also recognized the vital role of language in constructing reality and consciousness, viewing it as one of the symbolic forms of culture. The connection between language and personality has been examined by G. Steinthal, W. Wundt, E. Sapir, B. Whorf, J. Searle, J. Austin, and others.

In Ukrainian linguistics, the study of the relationship between language and personality has been multidimensional, but it often concentrates on the concept of "linguistic personality," integrating ideas from linguistic, cultural, and national identity research. Throughout this research, three main approaches have distinctly emerged: psycholinguistic, idiostylistic—based on studies of fiction language—and linguodidactic, aimed at shaping a student's linguistic personality (Struhanets, 2012: 128). Each approach has its own goals and objectives, but all are rooted in A. A. Potebny's doctrine, which consistently connects language phenomena to the psychological traits of the speaker.

I. Ogienko's work greatly influenced the understanding of the linguistic personality in Ukrainian linguistics (Ohienko, 1991). The scholar's ideas about language as a living system that impacts national spirit and identity are also important for many current Ukrainian studies.

Important for establishing the concept of linguistic personality in Ukrainian linguistics are Ivan Franko's views on linguistic activity, which the scholar connects to personality and the "secret work of his spirit." The scholar's ideas influenced the development of the idiostylistic trend in studying linguistic personality. According to L. Struhanets: "Creating the concept of further development of the Ukrainian language, developing the theory of linguistic behavior and linguistic life of a creative personality and the people, the scientist understood the linguistic activity of prominent writers in terms of their significance and role in these important processes" (Struhanets, 2012: 129). In recent decades, in addition to the aforementioned psycholinguistic, idiostylistic, and linguodidactic approaches to studying linguistic personality, sociolinguistic, linguocognitive, and linguocultural approaches have also emerged in Ukrainian linguistics.

Different perspectives on the study of linguistic personality highlight various interpretations of the phenomenon. For example, F.S. Batsevych emphasizes the communicative and pragmatic qualities of the speaker and supports the idea that "a linguistic personality is an individual who has a set of abilities and characteristics that determine the creation and perception of texts that differ in their level of structural and linguistic complexity and the depth and accuracy of reflecting reality" (Batsevych, 2004: 188). In L. I. Matsko's linguodidactic approach, the linguistic personality is viewed as a collective image: "a generalized image of a carrier of language consciousness, national language worldview, language knowledge, skills, language abilities and talents, language

culture and taste, language traditions and trends" (Matsko, 2009: 27). According to the researcher, the main components of a linguistic personality are:**

- linguistic and communicative social demands, motivational needs, and advanced competencies;
- profound language knowledge and mobility of its use;
- linguistic consciousness and self-awareness of a linguistic Ukrainian personality;
- national cultural relevance of a linguistic personality, knowledge of concepts and language signs of national culture;
- linguistic ability and language ability; linguistic flair, linguistic taste;
- conscious aesthetic linguistic behavior, linguistic stability (Matsko, 2009: 63-65].

Representatives from various fields highlight the communicative and pragmatic aspects of a linguistic personality, including creativity in language use and different competencies (linguistic, speech, communicative, socio-cultural) (Batsevych 2004; Yermolenko, 2007; Zahnitko 2012; Matsko, 2009; Selivanova, 2008; Struhanets, 2012). S.Y. Yermolenko points out that the concept of linguistic personality mainly relates to "language as an active intellectual trait of a person, language as a storehouse of knowledge, the most vital tool for mental and sensory mastery of the world by an individual" (Yermolenko, 2007: 318).

Ukrainian researchers agree that the language tools a person uses reflect their personality, perception, and ways of interpreting the world. These tools reveal their cultural and educational backgrounds, showing that a person's unique language patterns, developed through communication, express their personal traits. Many studies indicate that the development of a linguistic personality is influenced by socio-cultural factors (such as language, traditions, morals, values, religion, education, science, art, and ways of thinking and acting that shape a community's cultural landscape) and political factors (including government types, political institutions, culture, ideologies, political processes, and the state's influence on society) (Batsevych, 2004; Zahnitko, 2012; Yermolenko, 2007; Matsko, 2009; Struhanets, 2012). According to the Dictionary of Linguistic Terms edited by S. Yermolenko, a linguistic personality is described as "a combination of linguistic competence, the desire for creative expression, and the automatic, conscious use of various linguistic activities in the speaker. A linguistic personality is aware of their language practice and bears the influence of socio-social and regional backgrounds, along with educational traditions rooted in national culture. The creative approach and level of linguistic skill motivate the linguistic personality to continually reflect cultural worldviews—social, national, and cultural sources—and seek individual, stylistic ways of linguistic expression" (Yermolenko, 2001: 93). Therefore, a linguistic personality is a complex, multi-level concept that includes (a) linguistic competence, (b) the desire for creative self-expression, and (c) the free practice of diverse speech activities (Yermolenko, 2001: 95; Zahnitko, 2012: 345).

Research on virtual linguistic personality (web personality, communicative virtual identity) that has developed in Ukrainian linguistics over the past decade mainly relies on a general understanding of the concept of "linguistic personality" (Velyka, 2016; Nikiforova, 2018). It has been found that virtual linguistic personality is a new type of linguistic personality formed through language, strategies, and tactics of online linguistic behavior. It has been established that a linguistic personality in the digital space (a) can

create their own self using only linguistic means and build an image of the interlocutor based on their language; (b) maintains equality in communication regardless of age and social differences; (c) can influence the situation in virtual space; (d) shows diversity by appearing under different nicknames; (e) faces fewer restrictions on self-expression, limited to the rules of a group, forum, or chat (Tishchenko, 2011: 36-37).

The virtual linguistic personality differs from the real-world one, so its study should also be separate. The real-world linguistic personality adapts to the digital space by forming unique connections and interactions with the virtual environment, creating its own information field and new image. The digital space fosters the development of a new type of person who nurtures and promotes a new culture and invents new cultural practices. Studying the linguistic personality in the digital space helps us understand who a person is on the Internet, how they use and adapt language tools based on their communication needs, values, and social and cultural experiences.

3. MATERIALS AND METHODS

The unique nature of human activity in the digital space requires updating traditional research methods. There is a need to establish classification criteria for defining and characterizing units of analysis, principles for organizing experimental selection, and ethical considerations in research (Horoshko, 2009; Herring, 2004a). The features of digital space call for the development of new (hybrid and multimodal) research methods that combine multiple levels of data analysis (Bergman, 2007; Herring, 2004b; Morgan, 2007). To meet research goals, the authors used Computer-Mediated Discourse Analysis (CMDA), which allowed them to observe how personality is expressed through language across various online communication genres, such as social networks and forums. This method was used to analyze the structure and content of texts, as well as the language units within them, and to identify strategies and tactics in digital language communication. Although CMDA has analytical strengths, it also has limitations—as noted by Herring (Herring 2004b)—so it was appropriate to supplement it with other methods, particularly ethnographic observation.

The methodological foundation of our study is based on a comprehensive and systematic combination of both general scientific and specialized (linguistic) methods. The general scientific methods used include analysis, synthesis, information retrieval, descriptive approach, induction and deduction, and the method of continuous selection. The analysis method was applied to establish the theoretical basis of the study and to process the collected data; synthesis was used to define key concepts such as "linguistic personality" and "virtual linguistic personality"; information retrieval supported processing materials necessary for further analysis of linguistic personality in digital space; descriptive methods characterized the recorded linguistic phenomena, explained their meanings, features of functioning, and mechanisms of formation; etc. In the context of Computer-Mediated Discourse Analysis (CMDA), the authors employed (1) variable contextual analysis to examine how changes in context influence the meaning of words and their grammatical compatibility, and (2) interpretive analysis to clarify the meanings of linguistic units. Additionally, the study utilized several linguistic methods: conceptual-linguistic to identify established and new language units, lexical and thematic modeling to classify thematic groups of recorded language units, and functional-semantic to analyze the semantics and functions of these units (Dictionary of Modern Linguistics,

2012). The research material consisted of Facebook posts by influencers, mainly Ukrainian public figures and writers, including posts in groups and comments.

4. RESULTS

The study of linguistic personality in the digital age focuses on identifying features that differentiate a person's personality in the physical world from that in the digital environment. Personality is seen as an integrated system of socially meaningful psychological traits that shape an individual's identity and consistent attitude toward the world, themselves, and others, as reflected in social relationships, communication, and personal activities. The Encyclopedia of Modern Ukraine offers this definition: "A personality is an individual as a member of society, formed through socialization, capable of regulating life, performing social roles, and developing their own strategies for achieving goals in life" (Otreshko, 2022). The term "personality" refers to the social essence of a person, molded by biological, psychological, and socio-cultural factors throughout their life. Components of personality include intelligence, responsibility (the ability to manage one's behavior, analyze one's actions, and accept accountability), freedom, and personal dignity. A personality is also characterized by specific physical traits, temperament, character, abilities, needs, motivations (such as values and interests), and emotionality. The unique combination of these traits defines a personality and makes each individual unique.

Based on the analysis of scientific sources, the concept of the linguistic personality was defined. The study used the following definition: A linguistic personality is "a speaker, a type of communicator, a specific individual who knows the language thoroughly, consciously and creatively uses it, perceives language within the context of national mentality and culture as their spiritual core, employs language as an essential element of self-creation, self-knowledge, self-affirmation, and self-expression, as well as development and enhancement of their own intellectual, mental, emotional, role, expressive, and sensory abilities, and as the most vital means of socialization within human society" (Zahnitko, 2012: 345). Therefore, in Ukrainian linguistics, a linguistic personality is understood as a bearer of linguistic consciousness and a national linguistic worldview, possessing a set of skills and qualities that not only determine their ability to create and interpret oral and written texts but also define individuality in speech, ways of expressing thoughts, feelings, judgments, and worldview within the context of national mentality. A linguistic personality is expressed through communication, which mirrors society's shared knowledge and personal linguistic preferences. It exists within a specific time and language space filled with ideas, concepts, and stereotypes. In speech, a linguistic personality embodies both objective, societal knowledge and subjective insights that distinguish their individuality against the backdrop of contemporary language trends, fashions, and also exhibit particular linguistic behaviors. Essentially, a linguistic personality is a person viewed through the lens of language, revealing itself not only in what they say but also in how they say it (Figure 1).

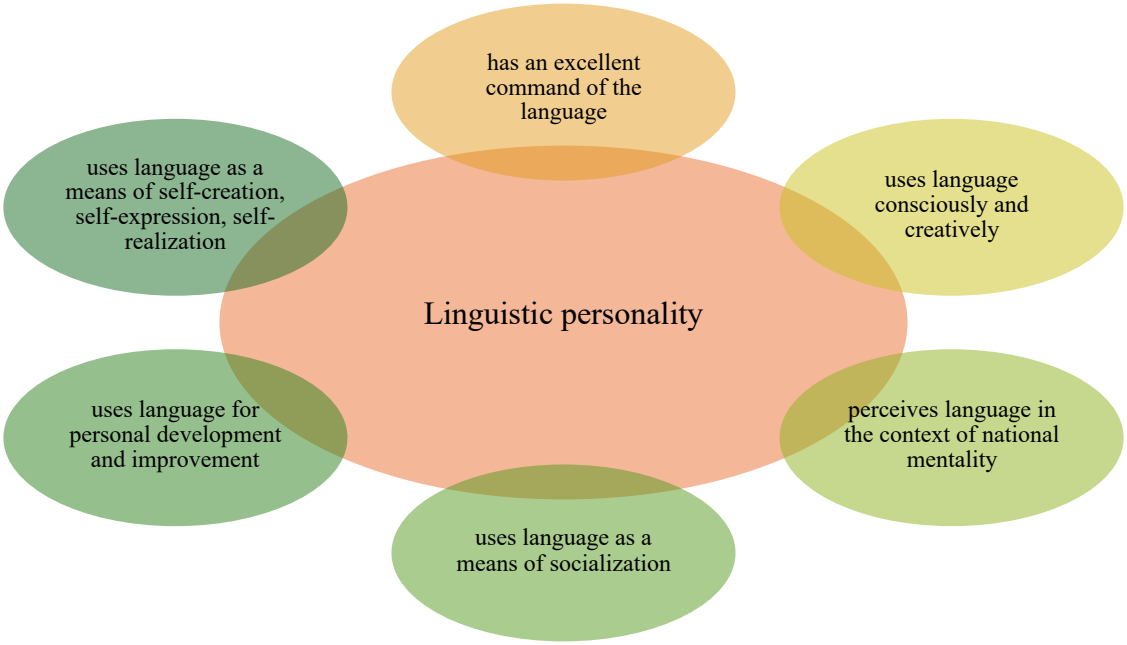

Figure 1. Characteristic features of a linguistic personality
Source: author's own development

The process of creating and developing a linguistic personality is steady and directly linked to the growth of a person's intellectual skills. "The formation of a linguistic personality is a constant and continuous (not fragmentary), synesthetic and synergistic process dominated by cognitive-intellectual and creative-activity factors," emphasizes Matsko (Matsko, 2009). The researcher points out several levels of linguistic personality development.

- level of linguistic correctness;
- level of expressiveness and communicative sufficiency;
- level of language saturation;
- level of communicative perfection;
- level of proficiency in a professional target language;
- level of linguistic image of social roles (Matsko, 2009: 63- 65).

Each of them reflects the degree of language acquisition and the degree of intellectual and spiritual growth of a person (Figure 2).

Figure 2. Levels of linguistic personality development
Source: author's own development

A linguistic personality is not an innate trait; it develops over a person's lifetime influenced by factors such as social environment (family, friends, colleagues), education (school, college, university, courses), professional activity, cultural experiences, and personal traits. The level of linguistic and communicative competence forms the basis for classifying types of linguistic personalities, specifically strong, medium, and weak ones. Based on proficiency in the literary language and speech creativity, there are elite, middle literary, literary colloquial, and family colloquial types of linguistic personality (Kosmeda, 2012: 43).

The digital age has significantly changed communication, leading to new language habits and a new kind of linguistic identity—the virtual one. To identify a user and grant access to specific online resources, services, or programs, an account must be created as a digital identifier of a person. In the digital space, individuals develop a digital identity, which is a version of their social identity. Authors see digital identity as a collection of information about a real person, including personal data (name, date of birth, email address, mobile phone number, logins, passwords, etc.) and digital traces left when engaging with websites, social networks, and online services. Digital identity allows for authentication, resource access, and transactions, ultimately shaping a person's reputation in the digital world.

The authors see virtual linguistic identity as the linguistic part of a person's digital identity. It comes from a person's (user's) online activities and reflects their true linguistic personality, though not exactly the same. The best platforms for verbal expression are online spaces where users can share opinions and interact, such as social networks, chats, forums, and messaging apps. A virtual linguistic identity is a specific, often changed version of a real linguistic identity that exists and works within the digital space. While the idea of "linguistic personality" is usually studied through printed texts and linked to writers, journalists, public figures, and scientists, the concept of "virtual linguistic personality" is broader. It includes all active social media users—bloggers, influencers, moderators, and group admins—who create virtual images using written or spoken language combined with visual elements like emojis and memes. With these tools, Internet users have more chances for self-expression than they do in the real world.

A virtual linguistic personality is an abstract concept used to study how people communicate online. It includes various roles such as a moderator, expert, troll (Nikiforova, 2018), social network profile creator, or commenters and followers, which can include both trolls and helpful commenters or online friends. The authors do not consider chatbots, virtual assistants, or artificial intelligence as virtual language personalities.

In the digital space, a virtual language personality can perform several functions, including

- communicative (exchange of information, ideas, emotions with other participants in the digital space);
- self-presentational (image formation, demonstration of one's own position, views, tastes)
- creative (creating interesting posts, artistic texts, new communication formats, etc;)
- manipulative (influence on thoughts, emotions, and behavior of other users through language and other means).

A virtual linguistic personality is characterized by a set of linguistic, stylistic, and communicative traits mainly demonstrated through posts on personal social media accounts, chats, forums, and similar platforms. These traits can be identified in vocabulary, word formation, syntax, stylistic details of language units, post structure, use of etiquette phrases, and more. It is important to understand that each virtual linguistic personality, like a real one, is unique, as shown in the texts they create.

Vocabulary is the most noticeable feature of a virtual linguistic personality. The words a user chooses in online communication not only convey specific information but also define the speaker, signal belonging to a particular community, and reveal their emotions and attitudes toward other participants and the topics being discussed.

The most common groups of words, aside from frequently used ones, found on Ukrainian social media pages include slang, colloquial and dialectal vocabulary, neologisms, and lexical borrowings. The frequency with which certain linguistic units are used influences how they shape a particular image online. At the same time, their widespread use in written computer-mediated communication reflects a liberalization of language norms on the Internet.

Slang, neologisms, and lexical borrowings—though different types of words—are connected by similar functions they serve in Internet users' posts. Using these words sometimes helps the speaker to identify as "one of the people" within a certain group, show membership in a subculture, or demonstrate awareness of current trends. In other cases, especially in influencer language, this vocabulary aims to create a distinctive image, provoke shock, or express humor, irony, or sarcasm. It also helps to establish a casual, informal tone in communication to stay connected with readers and attract a broader audience: "*Svitlyna – tse ukrainske slovo! Nam potribni nashi, ukrainski slova! Yaki peredaiut nash, ukrainskyi vaib! I yaki ye nashym komiuniti!!!" - Tsytata, yakshcho shcho"* (Andriy Kokotuha), "*Tak i ya chekaiu na ekranizatsiiu. Try roky chekaiu. Ale nicho. V nas komedii znimaiut shvydko, yak pronos. Use inshe yde dovshe. Tomu chekaiu razom iz vamy. Ya pyshu tretiu, vy zamovliaite pershi dvi*" (Andriy Kokotuha), "*Vyiavliaietsia, liudy shchyro viriat, shcho orhanizatory can skasuvaty pysmennykovi*

vystup bez yoho zghody (ot tsikavo, yak vy sobi tse v reali uiavliaiete?), i shcho, raz vydavnytstvo pominialo zaholovok – znachyt, vso, raskhodimsia..." (Oksana Zabuzhko), "*Malenkyi laifkhak, vin zhe sposterezhennia: In this case, there are no politicians or personalities, and there are no Ukrainians, but historians: "yim yedynym osvita zabezpechuie zdatnist na perelomakh epokh zberihaty yasne bachennia proportsii i perspektyvy ("znaty vidpovid v kintsi zadachnyka") – i ne poikhaty pry tomu mizkamy*" (Oksana Zabuzhko).

Dialect vocabulary is unrestricted on social networks, forums, chats, and messengers (Table 1). It is increasingly used for self-presentation and self-identification. In the Ukrainian segment of social media, there are groups that promote using such vocabulary or even communicating in the local language, but most users record it in comments on various social media pages as part of everyday communication: *Anu.... Ko znaie, shto yse za hryb? Fainoho ranishnoho kavilia Vam! Anu... a shto yse tsvite?* (Facebook group "Transcarpathian figs and more. Jokes in all languages of the world").

Colloquial and vernacular vocabulary on social media functions differently. Mostly, it is used spontaneously, without strict stylistic rules, reflecting spoken language and social status. However, it is also used deliberately to create a sense of informality and ease of communication, build a social image, or express emotions: *Do rechi, vidkryla shche odyn laifkhak (...): "koly nadovho "zavysaiesh" u vannii pid zvukovu symfoniiu "vzhzhzhzhzh – BAKh!! BAKh!! BAKh!! – tra-ta-ta-ta" (ostannie – tse v nas kanonada za Dniprom, koly "ba-bakhom" sviatyi PPO ne vtsiliaie), – to duzhe pomichnym chtyvom sluzhat vorozhi pabliky* (Oksana Zabuzhko).

Table 1. Lexical items and their functions

Groups of vocabulary	Examples	Functions
Slangisms	*zashkvar, krinzh, chilyty, roflyty, palyty, zavysaty, bombyty, morozytys, niashnyi, toksyk, myrniak, pidhoraie*	expression of belonging to a certain youth subculture, demonstration of informal communication, humorous effect
Neologisms	*zadonatyty* (make a donation), *zaskrinyty* (take a screenshot), *rozblochyty* (unlock), *khaipolovy-zaholovkoroby*	demonstration of relevance, technical awareness; readiness for linguistic creativity
lexical borrowings	*content, stream, like, repost, trend, lifehack, quadrobists, skvot, performance, consulting, spoiler, hater*	self-presentation as an educated, modern, "trendy" person who is oriented in the international digital space

dialectisms	*niano* (dad), *faino* (good, beautiful), *chichka* (flower), *kulchyky* (earrings), *kuhut* (rooster), *kavil* (coffee), *fihliuvaty* (to joke),	demonstrate that you belong to a certain region, create an authentic image in the virtual space; stylization tool
colloquial vocabulary	*bakhkaty, posudomyika, pralka, esemeska, symka, smailyk, fleshka, chtyvo, sho, vytrishchatysia, zhest,*	reproduction of the spoken element; manifestation of social status; informality and ease of communication; expressive expression of evaluation, emotions (lalohesion), etc.

Source: author's own development

The expression of a virtual linguistic personality at the morphological level is less obvious than at the lexical level, but it is equally important. When social network users employ morphological means, common patterns emerge, such as self-presentation, emotional expression, and facilitation of communication. Self-presentation often involves frequent use of the personal pronoun *"I"* and first-person singular verbs. Demonstrating emotionality and creating an impression of ease at the morphological level are often linked to using emotionally charged adjectives (like *pekelnyi, zháhlivyi, chudovyi, krutyi, nudnyi,* etc.), service parts of speech in an expressive role, interjections (oho! uf! okh!, etc.), and more: *A ot vid choho ya rozchulylas do sliz (Kailin iz poperednoho dopysu, nahadaiu, - vid rannikh dvirnykiv. shcho prybyraiut vulytsi po pekelnii nochi, i vidchynenykh o piv na shostu kaviaren: dlia tykh, khto spav u metro), – o tak tse vid rozpovidi moho vydavtsia (...), shcho po obidi pryikhaly do nykh iz knyharni – zabyraty zi skladu zamovleni knyzhky!*

Bo viina viinoiu, a knyzhka maie buty zavzhdy. (Navit u holod, yak to buv zafiksuvav Leonid Kyselov u virshi "Tato opovidaiut").

Os vse tse, razom uziate, – vid dvirnykiv do knyhariv – i zvetsia – kulturna natsiia. Oboviazkovo – vse razom, ne pereplutaite (Oksana Zabuzhko).

Another characteristic of a virtual linguistic personality is the use of various abbreviations: *diak* (thank you), *norm* (normal), *sps* (thank you), bdlska (please), *komp* (computer), etc.: *Khto bude na premieri – rozkazhit tut pro vrazhennia, bdlska, harazd*? (Oksana Zabuzhko). The presence of these abbreviations in posts indicates that their author belongs to a community that understands these "codes" and also shows the person's creativity and efficiency with language resources.

In the structure of posts and comments, authors can also identify the unique features of a virtual linguistic personality that reflect the intensification of written communication, emotional expression, and informality. These features go beyond the norms of literary language, but the authors do not see them as errors; instead, they view them as deliberate strategies that help them communicate effectively in digital spaces.

The specificity of a virtual linguistic personality is demonstrated through syntax, which mainly consists of simple structures typical of spoken language. Posts and especially comments often feature simple sentences, including common, straightforward one- or two-part sentences. For example, a post with a photo: "*Chorne zoloto*" *Karpat*. *Odyn den iz zhyttia zbyrachiv yafyn*...; from the comments: *Vazhka pratsia*; *Velykyi biznes po Zakarpatsky* (Made in Uzhhorod); a post with a photo: *Vidbudemo-Perebudemo-Zdobudemo-Budemo-Prebudemo-Ne zabudemo*; from the comments: *Liuto pliusuiu; Odnak zminytysia vazhlyvo...; Vse tilky z Bozhoiu dopomohoiu; Zdobudemo ta Budemo!!!!* (Myroslav Dochynets). Meanwhile, it is important to note that simplifying syntax is more common in written digital conversations (comments, chats, forums, messages) than in personal profile language. Posts on influencers' personal pages show a variety of constructions, mainly aligning with modern Ukrainian literary standards: *Zhyttia - tse hra. Sutsilna i neskinchenna. Z liudmy, z ideiamy, zi slovamy, z pochuttiamy, z hroshyma, zi zbroieiu, z doleiu... When I naively thought that each game had its own rules, I was mistaken. But this is not the case. Sharp players across all areas of "gamming" set the rules so they don't have to follow them. They play... until they win, lose, quit, or get exhausted...* (Myroslav Dochynets).

Another characteristic of syntax in posts and comments is the violation or absence of punctuation rules. Punctuation is often ignored in quick, informal communication, and sometimes it is used intentionally to create a specific effect. Most often, authors omit punctuation marks in comments on posts: *Vy klasna Oksana iz zadovolenniam vas chytaiu ta slukhaiu; Rezultat kokhannia yakym 229 rokiv nasolodzhuietsia liudstvo zavorozhuie* (From the comments under the post by Oksana Zabuzhko). Authors also frequently use excessive punctuation or employ it in unconventional ways. For example, exclamation marks (!!!) are used to express emotions; question marks (???) to emphasize confusion, doubt, or surprise; many dots (...) convey understatement, pauses, or irony: *Tse, shchos nOvE...vid brativ Kapranovykh...*; *Ale zh DYTYNA. Malia!!!!! Tse dykist. I hanba* (From the comments under the post by Braty Kapranovy). Parentheses are used to express either positive (closing parenthesis) or negative (opening parenthesis) emotions: *Tak vin zhe i ne obitsiav) Knyzhka zh ne nazyvaietsia "Idu tudy, de strashno" – ot vin i ne pishov))* (From the comments under Oksana Zabuzhko's post*)*.

In virtual communication, syntactic hybrids frequently occur—a mix of text and visual elements such as emojis, stickers, and gifs. These elements substitute words or even entire expressions (Palchynska, 2022).

5. DISCUSSION

The study results indicate that real-world linguistic personality and virtual linguistic personality are related but not identical. They share some characteristics and also differ, as shown in Table 2.

Table 2. Properties of real-world and virtual language personality

Criterion	Real linguistic personality	Virtual language personality
Sphere of existence	physical world	virtual world (digital space)
Form of expression	mainly written, recorded on paper	mainly written, exists in a digital environment
Authenticity	more authentic, reflects real personality traits	can be both authentic and constructed (mask)
Language	more inclined to adhere to the norms of the literary language	often deviates from the norms of the literary language
Communication	in written form, more thoughtful, balanced, texts are edited, not subject to correction after publication	written communication is more spontaneous, asynchronous, short-term, texts are subject to correction or even deletion after publication

Source: author's own development

Linguistic personality refers to how individuals present themselves: how they express their character, worldview, and their national, cultural, and social identities through language. However, linguistic expression and behavior in the digital world differ significantly from those in traditional settings. The linguistic personality in the real world is usually more stable in written form because published texts remain unchanged. In contrast, online language personality is adaptable and constantly evolving; it can vary depending on different communication contexts and groups, sometimes appearing completely different across various platforms. Digital communicators develop skills for quick and effective written communication, follow a "digital" etiquette, are often multilingual, and frequently switch codes. A person's online linguistic expression combines elements of both written and spoken language.

At the same time, a person's linguistic behavior and expression in both digital and real-world spaces heavily depend on their cultural background, age, gender, education, social status, the role they assume, the purpose of communication, whether they wear a mask or not, the specifics of the platform, and other factors. A virtual linguistic personality can either reflect their real-life self or be a completely new image created based on their desires, ideas, or strategy. Often, people become more open online, experimenting with language, style, and even their identity.

The digital environment lessens social pressure and enables anonymity, encouraging diverse personality expressions. The ability to create multiple virtual identities under different names (nicknames) and manage them, bypassing social norms and rules of real life, makes it easy to change appearance and social roles and to behave in a festive, carnival-like manner. This promotes creativity, but anonymity can also lead to online permissiveness and provoke hostility toward others. The capacity to hide one's identity, the lack of direct contact with conversation partners, and being in a virtual space that

seems to extend a person's inner world with fantasies and dreams slow down awareness and detach the primary identity, revealing hidden parts of the psyche.

Until recently, the linguistic personality of the real world was seen as the primary one, projecting itself and shaping its functioning in the digital space. However, with the advancement of digital technologies, the virtual and real worlds are increasingly merging, blurring their boundaries, and the importance of a person's electronic profile is growing. Its influence on a real linguistic personality is also gradually increasing. The authors fully agree with researchers who believe that "as an independent subject of a network community, a virtual personality can be a powerful tool of influence on a real person and society as a whole: either through the "search for oneself" and one's own identity (especially in adolescence), or through the desire to be accepted and appreciated in a virtual community, through the search for optimal forms of building social contacts..." (Andrienko, 2017: 4). The virtual linguistic personality is constantly evolving under the influence of new technologies and societal changes. The development of artificial intelligence, chatbots, and virtual assistants is further blurring the line between human language activity and digital algorithms, creating new challenges and research opportunities.

6. CONCLUSIONS

The digital age has introduced a new form of linguistic identity—the virtual one—that serves as a reflection of a person's true language personality. Comparing these two shows their similarities and differences. Both represent the same individual but in different communication environments. The virtual linguistic personality does not replace the real-world version; instead, it enriches it, displaying new, often mixed, traits in the digital space. Unlike the more stable and genuine real-world linguistic identity, the virtual version is flexible and constantly changing, especially seen in shifting roles and sometimes 'masks,' as well as in communication styles across various groups and platforms.

The way a virtual personality is conveyed linguistically often differs from standard literary language norms. This is especially true in vocabulary, syntax, stylistics, and text structure.

Virtual language personalities blur the boundaries between spoken and written language. The spontaneity and emotional aspects of communication lead to simpler syntax, abbreviations, and profanity, including slang, neologisms, dialect words, colloquialisms, and sometimes curse words. A virtual linguistic personality actively uses graphic elements like emojis, stickers, and memes in communication, which not only enhance and embellish the text but also function as complete communicative units.

Just like in the real world, language serves as a powerful tool for social identification in the digital space. Using certain groups of vocabulary helps individuals present themselves as "their own" within a specific online community.

Therefore, a virtual linguistic personality is a creation of the digital age. It mirrors people's desire for quick and effective communication, but at the same time, its presence brings new challenges for the development of the Ukrainian literary language. The virtual

linguistic personality shows the emergence and expansion of a new identity within the global digital space.

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Virtual Space and New Language Practices: Memes, Slang, and Lexical Transformations

Espacio virtual y nuevas prácticas lingüísticas: memes, jerga y transformaciones léxicas

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Abstract

By 2025, over 5. 2 billion people worldwide will use social media, representing approximately 63.9. 9% of the global population, with a growth rate of 4. 4.1% in the past year. Popular platforms include Facebook, Instagram, TikTok, Twitter, and WhatsApp. On average, users spend about 2 hours and 26 minutes daily on social media, accessing around seven different platforms. Communication on social media follows the same language norms—lexical, spelling, grammar, and syntax—as spoken language. This article aims to provide an in- depth analysis of lexical innovations in the language landscape shaped by social media and digital communication tools. It focuses on modern vocabulary used across platforms like Twitter, TikTok, Facebook, and Instagram. Special attention is given to modern English, which is the most widely used language in digital communication—approximately 1. 5 billion people speak English, and 52% of the world' s most popular websites contain English content. Using scientific and linguistic methods, the article explores how social media influences language at all structural and functional levels: lexical, phonetic, grammatical, syntactic, and graphic. It highlights characteristic lexical changes within groups, including memes, neologisms, abbreviations, acronyms, phraseological units, and hashtags. The functions of different types of lexical innovations on social networks are identified: hashtags promote seamless intercultural communication, neologisms help build group identities, memes serve entertainment and informational roles, and they disseminate prior information through text and graphics. The article also discusses negative effects of social networks on language, such as oversimplification, loss of nuanced expression, emergence of inaccuracies and grammatical errors in spontaneous communication, and potential adverse effects on mental health. Overall, the study shows that modern language practices reflect new concepts in social media culture—such as interactivity, upgrading, and visualization—

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that are transforming cultural and religious aspects and driving sustainable language change.

Keywords: social networks, memes, Internet slang, digital communication, Ukrainian language, language changes, folk religiosity, traditional culture.

Resumen

En 2025, más de 5200 millones de personas en todo el mundo utilizan las redes sociales, lo que supone aproximadamente el 63,9 % de la población mundial, con una tasa de crecimiento del 4,1 % en los últimos 12 meses. Las plataformas más populares son Facebook, Instagram, TikTok, Twitter y WhatsApp. El tiempo medio dedicado a las redes sociales es de aproximadamente 2 horas y 26 minutos al día, y el usuario medio tiene acceso a siete plataformas diferentes. El lenguaje utilizado en las redes sociales se basa en las mismas normas lingüísticas (léxicas, ortográficas, gramaticales y sintácticas) que el lenguaje hablado. El objetivo del artículo es ofrecer un análisis exhaustivo de las innovaciones léxicas en el espacio lingüístico bajo la influencia de las redes sociales y las herramientas de comunicación digital. El objeto de este estudio es el vocabulario moderno de varios idiomas utilizados en las plataformas sociales (Twitter, TikTok, Facebook, Instagram). Se presta especial atención al inglés moderno, que es el idioma más extendido en la práctica comunicativa: aproximadamente 1500 millones de personas hablan inglés, y el 52 % de los sitios web más populares del mundo contienen contenido en inglés. El artículo utiliza análisis científico y lingüístico para investigar las peculiaridades del impacto transformador de la comunicación en las redes sociales sobre el lenguaje en todos los niveles estructurales y funcionales: léxico, fonético, gramatical, sintáctico y gráfico. El artículo analiza los cambios léxicos característicos por grupos: memes, neologismos, abreviaturas y acrónimos, unidades fraseológicas y hashtags. Se determinan las funciones de las diferentes categorías de innovaciones léxicas en las redes sociales, en particular: los hashtags constituyen la base para una comunicación sin obstáculos en un contexto intercultural; los neologismos son medios para construir la identidad de determinados grupos sociales; los memes tienen la función de entretener e informar, difundiendo información previa en formato textual y gráfico. Se identifican los aspectos negativos del impacto de las redes sociales en el lenguaje: la simplificación excesiva y la pérdida de sus matices individuales, la aparición de imprecisiones y errores gramaticales debido a la naturaleza espontánea de la comunicación en las redes sociales, así como posibles consecuencias negativas para la salud mental. El estudio demuestra que el espacio moderno de prácticas lingüísticas innovadoras refleja nuevos conceptos de cultura de la comunicación en las redes sociales, así como de actualización interactiva y visualización, lo que transforma los aspectos religiosos y culturales y promueve cambios lingüísticos sostenibles.

Palabras clave: redes sociales, memes, jerga de Internet, comunicación digital, lengua ucraniana, cambios lingüísticos, religiosidad popular, cultura tradicional.

1. INTRODUCTION

Social networks speed up lexical changes by quickly sharing new slang, anglicisms, and abbreviations through constant communication and information exchange. This creates a unique jargon among online communities, making the language simpler, more chaotic in style, and less consistent with spelling norms. Platforms like Instagram, Twitter, TikTok, and Facebook help spread neologisms, memes, abbreviations, hashtags, and slang.

Social networks reach a wide audience, allowing the quick spread of new words without any limits of time or space. Data from the Pew Research Center (2019) shows that young people are the most active social media users and influence the growth of online speech and modern language overall. According to the data, 88% of people aged 18 to 29 use social media to communicate. This percentage drops with age: 78% for ages 30 to 49, 64% for ages 50 to 64, and 37% for those 65 and older.

This highlights the importance of defining communication styles on social networks as part of developing innovative language practices by analyzing and organizing stylistic features of communication and overall language dynamics across all functional and structural levels.

The article aims to examine lexical innovations in language shaped by social networks and digital communication tools.

2. LITERATURE REVIEW

Pezzuti et al. (2021), Sardinha (2022), and Wei (2020), through research on the multifactorial impact of social media on communication vocabulary in the English-speaking environment, found that new media influence vocabulary, leading to the emergence of new words, abbreviations, and informal expressions. This makes the language more dynamic and less formal, and it also helps strengthen interlingual ties through the exchange of information and experience. This influence is evident in users' spontaneous speech and in the development of a specific, context-dependent communication style.

Sun et al. (2021a) examined user neologisms that convey specific authorial intentions on social media and identified their main motivations: the need for expressiveness and language efficiency, new social communication realities, and the standardization of nominal models to improve consistency in language within particular contexts.

Rueger et al. (2023), studying the structure of new words—which includes components and methods for expressing emotional, evaluative, and expressive aspects of speech—concluded that the vocabulary used in comments or posts is rapidly gaining popularity and spreading among users. In other words, many trendy new words are beginning to dominate both online and offline, directly impacting and transforming the language.

The publications by Calude (2025) and Mukhtar et al. (2024), which conduct an in-depth study of lexical dynamics influenced by social media, are considered relevant. The researchers analyzed several innovative linguistic practices, including memes, hashtags, emojis, and neologisms, and found that the most significant lexical innovations originate from social media. Specifically, hashtags help increase the visibility of publications, attract new audiences, promote important narratives, and facilitate participation in

discussions or challenges; memes are used to express emotions, convey information, and create a shared cultural code among users; neologisms enhance emotionality and expressiveness in communication, help avoid lengthy descriptions, and preserve cultural identity.

ElSherief et al. (2018) identified the main prerequisites for how social media influences the dynamics of modern vocabulary, which contribute to the spread of stylistic features: widespread use of platforms, changes in communication methods toward more informal and practical styles, emergence of new content forms, and active use of emojis and abbreviations, making the language more visual and concise. Dziubina (2016) further explores how social networks manipulate language, using Twitter and its unique language form, twitspeak, as an example. The author highlights how the development of twitspeak has expanded vocabulary, notably through the creation of the verbal noun "twitting" in English. The researcher outlines key characteristics of social network communication, including dialogic, spontaneous, situational anchoring, informality, expressiveness, and brevity.

Jakic et al. (2017) identified the main ways to compensate for the lack of non-verbal cues when expressing emotions on social media, such as animation effects, emoticons, and more. Specifically, non-verbal communication on Facebook is replaced by sign language using interface features like "like" or "rock" – a way to say hello or flirt.

Researchers Herdağdelen and Marelli (2017), Androutsopoulos (2014), and Barrot (2022) have identified the main reasons for lexical changes influenced by social media, including the faster speed of communication (which leads to the creation of new neologisms and abbreviations), the emotional tone of communication (which encourages the use of emojis and abbreviations), globalization (the widespread use of international platforms promotes the spread of anglicisms and borrowings), and the development of communities (particularly subcultures that form within social media communities, impacting the lexicon's dynamics).

Many scholars have examined the overall impact of social media on language and how it continues to shape communication. Notably, conceptual publications by Lantz-Andersson (2018), Seargeant and Tagg (2014), and Schwartz et al. (2013) address these topics. The authors identified the primary structural and functional levels of social media's influence on language: lexical, phonetic, grammatical, syntactic, and graphic.

At the same time, analyzing modern language practices remains important due to the need to monitor social changes amid ongoing cross-cultural assimilation and the necessity to adapt language tools to current demands.

3. MATERIALS AND METHODS

To solve the tasks set in the paper, a combination of general scientific and special research methods was used:

- retrospective analysis – to study the state of scientific research on the problem of the influence of social networks on the development of innovative language practices;
- scientific and linguistic analysis – to study the peculiarities of the transformative impact of communication in social networks on language at all structural and functional levels: lexical, phonetic, grammatical, syntactic, and graphic;

- generalization and systematization – to systematize the conceptual and categorical apparatus and identify key categories and concepts;
- statistical and predictive research – to study the state of development of social networks;
- generalization and grouping – to identify the key areas of influence of communication in social networks on the development of innovative language practices;
- graphic method – for visual generalization of the functions of innovative dynamics of language practices under the influence of social networks.

The chosen methods enabled us to thoroughly examine the impact of social media on developing innovative language practices. They also helped us establish the main criteria and definitions, identify the most influential factors, and critically evaluate the associated risks and negative effects. The study's limitations stem from the difficulties of experimentally verifying theoretical conclusions to reduce bias and obtain more objective and reliable results.

4. RESULTS

An analysis of the development trends of social networks Instagram (from 1 billion users in 2020 to 2 billion in 2024), TikTok (from 700 million in 2020 to 1.5 billion in 2024), and Facebook (from 2.5 billion in 2020 to 3 billion in 2024) shows that the online population is increasing. Overall, social networks have a significant transformative impact on language across all structural and functional levels (lexical, phonetic, grammatical, syntactic, and graphic (Cabré Castellví, 2003)), leading to changes such as lexical, spelling, morphological, syntactic, punctuation, phonetic, and graphic modifications. It is worth exploring these in more detail.

1. ***Lexical changes in language*** mainly include the spread of English borrowings, neologisms, word shortening, acronyms, abbreviations, and expanding the meanings of words. Specifically, influenced by social media, it is useful to distinguish the use of repetitions, interjections, emotionally charged words, omission of words, sound imitation, and the use of stylistically simplified vocabulary such as vulgarisms and slang (Dziubina, 2016).

Most neologisms are created around words like *Twitter, tweet, follow, and Facebook* through their word-formation processes*: twitterazzi, tweetstealer, followorthy, facebooktivist*, and others. Neologisms are new lexical inventions that come from the act of naming and offer fresh ways to describe familiar ideas in creative ways. They include entirely new words in both meaning and form, often made by adding root parts or through borrowings (Kostyk et al., 2025).

Neologisms are the most noticeable signs of lexical change driven by social media. Examples include *influencer* (a person who has a significant impact on a social network's audience), *meme* (a small image used to share an idea or for humor), *ghosting* (completely ignoring someone without explanation), and others. These new words have now been successfully integrated into the English-speaking world (Hnatyuk et al., 2025).

In the context of purpose, neologisms can be differentiated into the main groups:

- nominations of traditional, but not previously defined concepts and phenomena *wild cycling*;
- nominations of completely new concepts and phenomena: *cyberterrorism*;

- neologisms-synonyms: *yucky – disgusting*;
- nominations of phenomena that do not currently exist, but are likely to do so in the future: *cultured meat*.

Additionally, within the interaction between the content plan and the expression plan, social media neologisms should be categorized into lexical innovations (*rainbowlicous*), which combine the novelty of the form with the preexisting meaning; transformation (*troll*), where the novelty of content merges with the novelty of form; and semantic innovations (*on point*), where the new meaning is integrated into the existing form (Davies, 2012).

Regarding the spread of slang, foreign language borrowings are most actively promoted through social media, including *user interactions, online content, and community engagement*. It is worth noting that, for example, in Japanese, the rapid growth of social networks has led to the emergence of a specific type of slang that involves the active adoption of borrowed words – gairaigo, which are written in the katakana alphabet and reflect the general tendency of Japanese youth toward Western culture (Chernova, 2013). Among the most common ways of creating new slang terms on social media are

- foreign language borrowings (*like, fake, friend, use, sub, reboot*)
- abbreviations (*IMHO, spam, LOL*, etc.), which provide information in an encrypted form and may reflect taboo definitions;
- abbreviations (*admin – "administrator", bro – "brother", inet – "Internet"*, or Ukrainian: *info – "information", dyaki – "thank you",* etc.), which are optimized spellings of inconvenient long words, given the need to maintain typing speed while preserving the content of the message.

Acronyms and abbreviations popular on social media save time, speed up communication, and cross cultural gaps. Notably, new lexical innovations have gained popularity: *LOL – laugh out loud, GTG – got to go, NP – no problem, BAE – before anyone else, IDK – I don't know, ICYMI – in case you missed it.*

Given the rise of slang and its incorporation into public spaces, including official ones, the question arises about the need to "normalize" new language terms. Specifically, in 2013, the Oxford English Dictionary selected "*selfie*" as its word of the year based on its criteria. Meanwhile, the word "*Google*" is now widely used as a verb (in Ukrainian, "*google*" means to search the web). Words like "*photobombing*," "*hashtag*," "*emoji,*" and several others have become common in English (Aisyah, 2022).

It should be noted that, alongside the trend of word formation, the expansion of a word's meaning is also common. Examples include *"wireless*," *"wall*," and *"like*," which are now used in fundamentally new ways. For instance, the word "add" now means an invitation to connect Facebook accounts, and "*likes*" measure popularity.

Memes are a vital part of digital culture, evolving vocabulary and gaining popularity on social media, becoming recognizable symbols of specific emotions or phenomena (e.g., *Feels good man, Ok boomer*). Memes blend entertainment with information, spreading particular stories through both text and images (Fubara, 2020).

2. ***Spelling changes*** influenced by social media reflect a general trend to move away from traditional spelling rules and lower literacy standards. Information is often shared without capitalization ("*I'm going to America*"), while capital letters are used to indicate accents in words instead of other context-based means (*shudA, proshU*), or to add emphasis and emotional tone: *Proshshu! Daaaaaay!*

3. ***Morphological and syntactic changes*** in language caused by social media are seen as the spread of free, simplified communication, which diminishes the seriousness of language and makes it less standardized. Social media, as an innovative linguistic platform, offers unlimited space for experimentation, which, among other things, weakens language traditions (Hamed, 2023; Page et al., 2022; Reinhardt, 2019, Koliechkin et al., 2025). The tendency toward agrammatism is characteristic.

The dynamics of social media language at the grammatical level is most often manifested in the following dimensions:

- active involvement of punctuation and rhetorical questions, parcellation aimed at expressing personal attitudes: *... This is just a waste of time, don't you think?*
- incorrect or insufficient punctuation, or their complete absence;
- hesitations: for example, *Um, er, erm*;
- violation of formal and syntactic connection between separate parts of the statement;
- absence of inversion in questions, violation of word order in the sentence: *i fine = I am fine*, *do you feel better now*?
- the presence of run-on sentences: *Perhaps I should be clearer....*;
- the use of different kinds of interruptions: *take yo shoes off when yu walk in the house..!!*
- violation of coordination between sentence members, omission of words: *i don't know, how ya doin, i got enuf* (Dziubina, 2016);
- active use of interjections: *Ugh, euugh, yikes, yipes*;
- the use of simple, elliptical sentences to create the illusion of real communication and to add dynamics (in particular, on Twitter);
- laconicism, which leads to increased information content: *"I will send her a message on facebook" = "I'll facebook her*";
- expressiveness of syntactic constructions;
- complication of simple sentences by the use of homogeneous members;
- use of ironic and metaphorical syntactic constructions.

Additionally, it is important to recognize a key part of social media syntax—a hashtag, which is a clickable keyword starting with "#" used to categorize content effectively on a social network. Hashtags serve as markers for specific topics, connecting platform users through shared interests and grouping related messages (e.g., *#FOMO, #ThrowbackThursday*). Among popular modern English-language hashtags on social media, the most common are short and simple, such as *#me, #selfie, #fun, #swag, #smile, #happy*, and others.

4. ***Punctuation and phonetic and graphic*** modifications of the language under the influence of social media have found practical expression, first of all, in:

- the active use of numerous punctuation marks, which serves as a way of expressing emotional states: *wow* !!!!!!, *you know* .....;
- using a series of interrogative or exclamatory sentences: *This story is the most amazing story ever told!!! Mr. Marriott, you are not just fortunate and prosperous, but more importantly, highly blessed and favored by God!!! I wish you and your family continued success and a blessings forever!!!* (Dzyubina, 2016);

- use of capital letters to emphasize accents (*it's Right*), or to intensify expressiveness or emotionality (*NOOO!*);
- the use of replication (repeated repetition of one letter at the end of a word – *Yessss, hushhhh*) for the purpose of emotional and semantic emphasis;
- active use of punctuation patterns, emoticons, mathematical symbols to express emotions and feelings, and maximize the visualization of a text message;
- displaying individual letter combinations with numbers: *4 U (=for you)*.

In general, the dynamics of language practices under the influence of social media serve several functions (Table 1).

Table 1. Functions of the innovative dynamics of language practices under the influence of social media

Function	Characteristic features	Examples
adaptive	gradual integration of definitions of new realities, phenomena, technologies, means of communication interaction	neologisms *emoji, podcast, streaming, cloud computing*
communication	ensuring concise, effective, fast communication by minimizing the number of words used, simplifying the way of expressing thoughts, optimizing information exchange processes	abbreviations *FF – Follow Friday, RT – Retweet, BRB – be right back*
socio-cultural	reflection of trends in socio-cultural development, public sentiment, interpretation of behavioral patterns, symbolism of certain social groups	*vibe, FOMO – fear of missing out, YOLO – you only live* once
globalization	intercultural adaptation and overcoming cultural barriers, combining different categories of users	*viral, app, stream, cloud*
creative	Improvement of language tools and forms of speech as a response to the need to express complex messages in the shortest possible time	*I had to write a tweetstorm to explain my thoughts on this issue, Tweetstorm*
transformational	integration of new lexical items into everyday use or formal communication	*App (Application), vlog (videoblog)*

Source: author's development

It is important to recognize that lexical innovations on social media, as symbols of socio-cultural change, may lose relevance or meaning (e.g., *planking*). Simultaneously, some words continue to be used even if their original meanings shift (e.g., *viral*). This demonstrates the ability of social media lexical innovations to adapt to new contexts (Hnatyuk et al., 2024).

Overall, innovative language practices influenced by social media contribute to vocabulary evolution, explain new social phenomena, and incorporate them into everyday

communication not only online but also in daily interactions (Diakiv et al., 2025). Social networks heavily impact traditional culture and even folk religiosity, changing how people communicate, share information, and form social values. The media help spread trends and cultural globalization quickly but can also lead to the decline of traditional norms and the spread of misinformation. Specifically, information bubbles develop, limiting access to diverse viewpoints and reinforcing prejudice. Social media can also promote excessive consumption and pressure trends, resulting in the loss of unique cultural practices in favor of global standards.

Social media has a dual effect on religiosity: it provides access to religious content and promotes community building, creating opportunities for spiritual education and evangelism; however, it also introduces harmful challenges to the authenticity of religious experience—such as superficial views of faith, dependence, lower self-esteem, depression, and the spread of misinformation.

5. DISCUSSION

The scholarly discussion about how social media influences the development of innovative language practices and changes in the modern lexicon is reflected in various researchers' interpretations of the features, benefits, and challenges of this process. Specifically, Ge and Gretzel (2018) highlight the main language changes driven by social media, including expressiveness, brevity, and the active use of emojis and slang, which make language more emotional, spontaneous, and reduce its formal tone. Researchers argue that social media accelerates communication and information sharing and actively influences self-expression. These findings should also consider potential related challenges: risks of language distortion, deterioration of grammatical structure, and significant negative impacts on the mental health of social media users.

Sun et al. (2021b) highlight the potential of social media to create new forms of vocabulary, focusing on key areas of language change: expressiveness and conciseness while keeping the clarity of short messages; the rise of new words, interjections, and abbreviations used in everyday communication; the dominance of informal, conversational speech; the active growth of slang and the use of visual elements (gifs, emojis, etc.) that complement or even replace verbal communication. The authors argue that this helps preserve the benefits of traditional vocabulary and ensures compatibility with modern society's needs for quick information sharing and enhanced communication tools.

The current study shows how social media influences the development of innovative language practices. Similar conclusions were reached by Kramsch (2014), who highlighted the positive aspects of lexical change—such as encouraging language experiments to expand modern vocabulary, spreading information and knowledge through social platforms, improving users' communication skills, enabling self-expression, and fostering cross-cultural connections. The research findings should also consider the negative effects of language changes under social media's influence, including the oversimplification of language and the loss of subtle meanings, the appearance of inaccuracies and grammatical errors due to the spontaneous nature of social media communication, and possible negative impacts on mental health caused by changes in social media language and excessive content consumption.

Rahmatdildaevna Kurmanbekova et al. (2023) identify the most distinctive feature of social network language as the merging of spoken and written communication, making their boundaries less clear. We should agree with the authors that there are strong reasons to distinguish a special language style—the style of social media—which can have both positive and negative effects on the overall development of the language.

Chancellor and De Choudhury (2020) emphasize specific lexical changes at certain structural levels that extend beyond social media, affecting other areas of language use. The authors describe these processes as widespread, arguing that overall literacy is declining due to the spread of a simplified approach to literary language norms and the dominance of non-standard features in everyday speech.

Analyzing the study by Sundaram et al. (2023), it is clear that English is the most posted language on social media, followed by Japanese, and then Spanish.

It should be noted that this study has certain limitations: a small sample size for the review and the resource demands of long-term research. Future studies should focus on evaluating the effectiveness of language-dynamics monitoring systems on social media in preserving literacy narratives and traditional structures.

6. CONCLUSIONS

The modern language is characterized by constant change due to the addition of new words and ways of expressing the communicative and cognitive needs of today's society. Modern social networks provide a supportive environment for creating new concepts and vocabulary, emphasizing visualization. Platforms like Instagram, TikTok, Twitter, and Facebook generate various neologisms, memes, hashtags, abbreviations, and slang used in mainstream communication. By expanding the vocabulary with new phrases, abbreviations, acronyms, and stylistic features, social networks enhance the modern lexicon, giving it qualities of informal, unofficial communication, flexibility, adaptability, and multifunctionality.

In general, social media has a practical, transformative effect on language at all structural and functional levels: phonetic, grammatical, lexical, syntactic, and graphic. Different categories of lexical innovations serve their own functions: hashtags facilitate smooth communication in an intercultural context, neologisms help construct the identities of specific social groups, and memes serve both entertainment and informational purposes by disseminating precedent-setting information through textual and graphic means.

Although social media's influence on language brings several challenges, such as oversimplification, loss of nuance, and the emergence of inaccuracies and grammatical mistakes from spontaneous communication, along with possible negative effects on mental health, the lexical changes on platforms like Twitter, TikTok, Facebook, and Instagram are transforming traditional communication practices and becoming a vital part of linguistic evolution.

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Social Media as a Factor in the Evolution of Modern English-Language Discourse

Las redes sociales como factor en la evolución del discurso moderno en inglés

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Abstract

The importance of this study comes from the fact that social networks have become not only the main means of communication but also a catalyst for a major transformation of the English language. In the digital age, English adapts to the needs of speed, multimodality, and emotional expression, which creates new challenges for teaching it as a foreign language. The study aims to explain how social networks influence the structure, functions, and stylistic standards of modern English and to explore the pedagogical implications of these changes for EFL education. The methodology combines quantitative content analysis, qualitative discourse analysis, and statistical generalization from leading international reports. The findings show an increase in English-language content on social networks to 74.5% by 2025, a rapid growth in new words, and a trend toward simpler sentence structures. Users are actively creating new pragmatic and visual-semiotic codes, giving English a mixed nature that combines written, spoken, and visual forms. Cluster and factor analysis from 2019–2025 helped categorize social networks based on linguistic innovation and identify key factors driving digital language change. Predictive models indicate continued growth in English content by 2027, reinforcing its role as the global digital lingua franca. The results provide practical value for updating EFL teaching methods and enhancing students' digital communication skills.

Keywords: pedagogical implications of language changes, influence of language transformation on EFL teaching, presentational discourse, microtext

Resumen

La relevancia del estudio se debe a que las redes sociales se han convertido no solo en el medio de comunicación dominante, sino también en un catalizador de la profunda transformación del idioma inglés. En la era digital, el inglés se adapta a las exigencias de velocidad, multimodalidad y expresividad emocional, lo que genera nuevos desafíos para su enseñanza como lengua extranjera. El estudio tiene como objetivo aclarar cómo las redes sociales influyen en la estructura, las funciones y las normas estilísticas del inglés moderno, así como determinar las implicaciones pedagógicas de estos cambios para la educación en EFL. La metodología combina análisis de contenido cuantitativo, análisis discursivo cualitativo y la generalización de datos estadísticos procedentes de informes internacionales de referencia. Los resultados revelan un aumento del contenido en inglés en las redes sociales hasta el 74,5% en 2025, un rápido crecimiento de neologismos y una tendencia creciente hacia la economía sintáctica. Los usuarios están configurando nuevos códigos pragmáticos y visual-semiológicos, otorgando al inglés una naturaleza híbrida que combina discursos escritos, orales y visuales. El análisis de conglomerados y de factores para 2019–2025 permitió clasificar las redes sociales según su nivel de innovación lingüística e identificar los principales impulsores del cambio lingüístico digital. El modelado predictivo sugiere un mayor crecimiento del contenido en inglés para 2027, reforzando su estatus como lengua franca digital global. Los resultados ofrecen un valor práctico para actualizar las metodologías de EFL y fortalecer la competencia comunicativa digital del estudiantado.

Palabras clave: Implicaciones pedagógicas de los cambios lingüísticos, influencia de la transformación lingüística en la enseñanza del inglés como lengua extranjera, discurso de presentación, microtexto.

1. INTRODUCTION

In the modern digital age, the English language is undergoing an unprecedented transformation driven by social networks, which have become the main space for global communication, self-expression, and sharing information. Daily interactions in the digital environment create new linguistic practices—short, emotionally charged messages that often combine text, images, sounds, and symbols. This change affects not only the forms but also the very structure of English, encouraging the development of neologisms, abbreviations, hybrid grammatical structures, and visual-semiotic units. Such a process is not chaotic; it reflects deep cultural, technological, and cognitive shifts in how humans communicate. The issue this research addresses is that traditional linguistic and pedagogical approaches struggle to keep up with rapid digital changes. The question is not only how language evolves but also how these changes impact language teaching, especially in teaching English as a foreign language (EFL). Social media acts both as a catalyst for linguistic innovation and as a source of erosion for traditional norms, creating a complex balance between creativity and standardization (Bakhov et al., 2024a). A review of scholarly works shows that this topic is actively explored in three main areas: linguistic, sociolinguistic, and pedagogical. Barrot (2023), Butabayeva and Mohammad (2024), and Mialkovska et al. (2024) argue that social platforms generate a unique form of digital discourse, where economy of language and emotional expressiveness are key principles of communication. Davydova (2024) and Raghava (2024) also note that these platforms foster a form of digital discourse emphasizing brevity and emotional impact. et al. (2023) warn that the spread of informal language and slang could diminish overall language literacy. Pedagogical research by Alkamel (2024), Apoko and Waluyo (2025),

and Singer (2024) highlights social media's potential as a learning tool, while Li and Liu (2024) stress the importance of rethinking teachers' digital literacy skills to adapt to these changes.

Despite extensive research, there are still "blank spots": a lack of a comprehensive analytical model explaining how digital communication practices influence lexical, syntactic, and pragmatic changes in the English language; and a shortage of studies that combine linguistic analysis with pedagogical interpretation of these changes. This underscores the need for an interdisciplinary approach that integrates digital linguistics, sociolinguistics, and didactics.

The aim of this study is to identify the patterns showing how social networks influence the transformation of modern English, describe changes in its lexical, syntactic, and pragmatic structures, and explain the pedagogical implications of these changes for teaching English as a foreign language. The objectives include identifying the main linguistic features of digital discourse, summarizing the sociolinguistic factors behind its development, analyzing statistical trends regarding the spread of English online, and developing practical recommendations for education.

2. LITERATURE REVIEW

Current research on how social media impacts the evolution of the English language mainly focuses on three key areas: linguistic, sociolinguistic, and pedagogical. There is a clear pattern in the literature that views social platforms as a driving force behind changes in the structure, meaning, and functions of English. For example, in the works of Barrot (2023), Butabayeva and Mohammad (2024), Mialkovska et al. (2024), Bakhov et al. (2024b), and Chaturvedi et al. (2024), social media is described as a space of rapid linguistic innovation, where new words, abbreviations, hybrid phrases, and simplified expressions are generated. The authors emphasize that digital discourse encourages the development of new pragmatic markers that reflect the speed, emotional tone, and visual aspects of modern communication.

Doval et al. (2018) made a significant contribution to the study of microtexts. Chaturvedi et al. (2024) and Satapathy et al. (2023) described morphological and syntactic compression as key features of online communication. Analysis of corpus data shows that English on social networks tends to simplify grammatical structures, omit conjunctions, and increase the use of elliptical sentences. Scientists Huertas-Tato et al. (2024), Karjus and Cuskley (2024), Wilson and Anam (2024), and Li and Liu (2024) emphasize that these phenomena result from language adapting to a technological environment that demands short, quickly understandable, and emotionally rich expressions.

The sociolinguistic aspect of the research by Davydova (2024), Wang and Curran (2025), Singer (2024), and Wilson and Anam (2024) reveals the dependence of language innovations on the cultural and demographic factors of users. In particular, it has been found that younger generations who actively use digital platforms show a greater tendency for code-mixing, the emergence of new social jargons, and the use of English as a means of online identification. Researchers note that social networks blur the line between formal and informal registers, creating a new "hybrid norm" of written and spoken speech. Meanwhile, pedagogical studies have intensified, analyzing how social networks impact teaching English as a foreign language. According to the works of Alkamel (2024), Alsenafi et al. (2024), Apoko and Waluyo (2025), and Azizah and Supeno (2024), social platforms can be effective tools for developing language

competence, motivation, and intercultural communication. Mitrulescu (2024) and Singer (2024) argue that digital media stimulate the development of creativity, critical thinking, and learner autonomy, and that teachers should combine traditional methods with interactive learning formats.

A separate area of research examines the statistical trends in the spread of English in the digital realm. Reports by Kemp (2019; 2024; 2025), We Are Social & Kepios (2025), Martin (2025), Chaffey (2025), and Backlinko (2025) indicate that the share of English-language content on social media will increase to 74.5% by 2025 and that the number of neologisms will double over the past six years. This supports the connection between the digital popularity of English and its lexical creation. It is also notable that new research by Raghava et al. (2023), Noori et al. (2022), and Villalva Reinoso et al. (2024) emphasizes a shift toward socially oriented language learning, where English functions as a tool for global self-identification rather than merely a learning medium. Therefore, current scientific evidence demonstrates that social networks play a crucial role in shaping new norms of English discourse–from lexical innovations and syntactic economy to pedagogical advances in EFL education (Barrot, 2023; Huertas-Tato et al., 2024; Wang & Curran, 2025; Apoko & Waluyo, 2025).

Further analysis shows that researchers are increasingly using interdisciplinary approaches, combining linguistics, communication technologies, and pedagogy. For example, Muftah (2024), Noori et al. (2022), Ravindran et al. (2022), and Song and Xiong (2023) highlight that social media during the COVID-19 pandemic has become not only a tool for distance learning but also a space for developing new language practices. Their studies reveal a shift in users' language habits—more emphasis on multimodal communication, simplified grammar, and symbolic means (emojis, abbreviations) as part of discursive economy. These trends confirm that digital platforms play a significant role in the evolution of the English language, affecting both daily communication and educational settings. Some authors point out the sociocultural aspects of these changes. Villalva Reinoso et al. (2024) demonstrate that interactions on social networks create new speech patterns among EFL students, while Raghava et al. (2023) identify social media as a factor in shifting language norms across different cultural groups. Meanwhile, Satapathy et al. (2020) and Satapathy et al. (2023) introduce a technological perspective on digital language interpretation–through microtexts, automatic normalization, and algorithmic modeling–that is becoming increasingly relevant for artificial intelligence and natural language processing.

Recent reviews by Alkamel (2024), Li and Liu (2024), Wang and Curran (2025), and Singer (2024) highlight a shift from passive perception of language to active user participation in its creation. The authors note that the digital space promotes the development of linguistic agency — a conscious act where the user is simultaneously the creator, interpreter, and consumer of linguistic content. This encourages the democratization of language and improves its ability to adapt to cultural and technological changes.

Additional sources expand the empirical foundation of the study, enhancing understanding of the social, pedagogical, and cognitive aspects of language change. For example, Muftah (2024) highlights that the COVID-19 pandemic has accelerated the digitalization of education, turning social networks into the main channel for interaction between teachers and students; at the same time, users' language has become significantly simplified, with increased use of abbreviations, emojis, and informal constructs. Noori et

al. (2022) examined the role of social platforms in Afghanistan's higher education system — finding that EFL teachers and students actively use Facebook and WhatsApp as spaces for language practice, which boosts motivation but also worsens issues of orthographic and syntactic instability. Ravindran et al. (2022) explored how digital media impacts oral communication during distance learning, concluding that social networks help develop spontaneous communication skills but decrease the accuracy of language structures. The comparative study by Song and Xiong (2023) showed that social media influences vocabulary development more than traditional language learning apps because it offers authentic contexts and social interaction. Meanwhile, Raghava et al. (2023) focused on social media's impact on non-native English speakers, revealing that constant exposure to online content leads to dialect mixing and the emergence of new pronunciation and spelling variants. The study by Villalva Reinoso et al. (2024) confirmed that regular use of social networks improves English communication skills, especially speaking, as it combines play, self-presentation, and informal learning. Overall, these sources demonstrate that the digital environment both stimulates language activity and poses risks of language norm fragmentation, which calls for methods to balance user creativity with the preservation of speech quality.

However, several important issues still remain unresolved in the academic literature. First, there is still a lack of comprehensive models that explain the relationship between users' digital practices and structural changes in English at the levels of vocabulary, syntax, and pragmatics. Second, there is insufficient research on the impact of social media on pedagogical standards for teaching English, especially regarding methods for integrating digital formats into formal education.

3. RESEARCH METHODS

The study was conducted in 2024–2025 by the author using a comprehensive methodological approach that combined content analysis, corpus analysis of digital texts, discursive, cluster, factor, and predictive analyses. This integrated approach enabled us to identify both quantitative patterns of the spread of English in social networks and qualitative features of its linguistic transformations. The empirical data came from international analytical reports such as Kemp (2019; 2024; 2025), We Are Social & Kepios (2025), Chaffey (2025), Martin (2025), and Backlinko (2025). These reports contain aggregated statistics on the share of English-language content, the evolution of neologisms, the average length of posts, and the level of multimodal activity of users across social networks like Facebook, Instagram, TikTok, X/Twitter, and LinkedIn. For qualitative corpus analysis, more than 1000 digital texts were selected – including microposts, comments, and video captions- containing neologisms, abbreviations, emojis, and hashtags.

The first stage involved a quantitative content analysis, comparing statistical indicators such as the proportion of English-language content, the number of neologisms, post length, and the frequency of visual-semiotic elements from 2019 to 2025. The second stage included a qualitative discourse analysis to identify structural and pragmatic changes in digital texts. Reviewing 25 scientific publications (Barrot, 2023; Butabayeva & Mohammad, 2024; Mialkovska et al., 2024; Wang & Curran, 2025; Singer, 2024) allowed for a comparison between empirical data and theoretical models of digital speech. To differentiate typological differences among social networks, cluster analysis was conducted using the Ward method based on squared Euclidean distance, which identified three platform groups by speech innovativeness: interactive-multimodal (TikTok, Instagram), text-centric (X / Twitter, Threads), and professional-communicative

(Facebook, LinkedIn). In the third stage, a factor analysis with the principal components method revealed two key factors of language dynamics: communicative speed (41% of the variance) and social expressiveness (32% of the variance), together accounting for 73% of the total variation in the indicators. The final stage involved building a linear regression model using the least squares method, predicting that the share of English-language content would rise to 76.8% in 2027 ($R^2 = 0.94$). This demonstrated a long-term trend toward the globalization of English as a universal lingua franca within the digital environment. The combination of quantitative and qualitative methods ensured the results' representativeness and provided a comprehensive view of how the English language evolves under social network influence—ranging from lexical and syntactic changes to new pragmatic and pedagogical models.

4. RESEARCH RESULTS

Current research on the linguistics of digital communications highlights several key scientific methods for studying how social media influences the development, variation, and functional changes of the English language. Below is an analysis of these methods, with corresponding citations in APA style.

The first method is a literature review, which aims to organize the findings of previous studies on language change in online settings. For example, Wahyudiantari (2024) reviewed the current sociolinguistic literature and found that language variation in social networks depends on factors like age, gender, cultural identity, and other individual and social characteristics (Wahyudiantari, 2024). This method helps us identify overall patterns—particularly that social networks foster an environment for faster changes in language forms, where users from different social and cultural backgrounds interact and influence each other.The second approach involves *empirical studies of platforms or contexts, utilizing corpus or mixed quantitative and qualitative analyses,* where researchers examine specific data from social networks such as comments, tweets, and chats. For example, Al-Khasawneh (2023) analyzed Twitter discourse using quantitative methods and demonstrated that common elements — hashtags, abbreviations, emojis, and linguistic innovations—reflect the fluidity of language norms in digital spaces. Such studies highlight the role of particular platforms as catalysts for transforming the English language.

The third approach involves *lexical-typological and corpus analysis,* where changes in vocabulary, syntax, and grammar are tracked through large collections of digital texts. Specifically, the study by Panjaitan & Patria (2024) demonstrates that social media foster linguistic simplification (such as abbreviations and phonetic spelling) and modify syntax and grammar, which could indicate long-term shifts in language standards (Panjaitan & Patria, 2024). This method enables us to observe how online English-speaking communities adapt the language to new conditions—using shorter sentences, less lexical diversity, new units, and hybrid forms.

The fourth approach is *the sociolinguistic approach to language change,* which explains language variation through factors like social identity, group affiliation, and technological influences. Although research does not always focus on social media, analysis of its role in language change shows that online communities have their own linguistic markers that can influence offline language or shape mainstream language norms (Onwudinjo & Udoye, 2025). This approach helps us see English as a global digital language, a language of online identity, and a language of mixed discourse.

Together, these approaches demonstrate that the impact of social media on the English language is intricate: it involves changes in vocabulary (neologisms, abbreviations, emojis, online jargon), grammar and syntax (shortened sentences, non-standard spelling), as well as shifts in the functional role of language (English as a global digital lingua franca, as a way to identify online communities). Researchers note that social networks do not merely passively reflect changes but actively drive them—they create conditions for the faster spread of new forms, cross-linguistic and cross-cultural influence, and the blending of traditional standardized norms with innovative options.

In the digital age, social platforms have become not only communication tools but also powerful engines for linguistic change. They generate a unique *digital discourse* that promotes the development of new speech forms, abbreviations, hybrids, and shifts between formal and informal registers. Recent studies by Chaturvedi et al. (2024), Doval et al. (2018), and Mialkovska et al. (2024) confirm that social media creates its own communication ecosystem, where linguistic innovations are standard, and economy of language drives interaction. These changes show up in morphological simplification, phrase compression, the emergence of new pragmatic markers, and the rise of microtexts as the main communication format online. Figure 1 summarizes the key linguistic features of the transformations driven by digital discourse on social platforms.

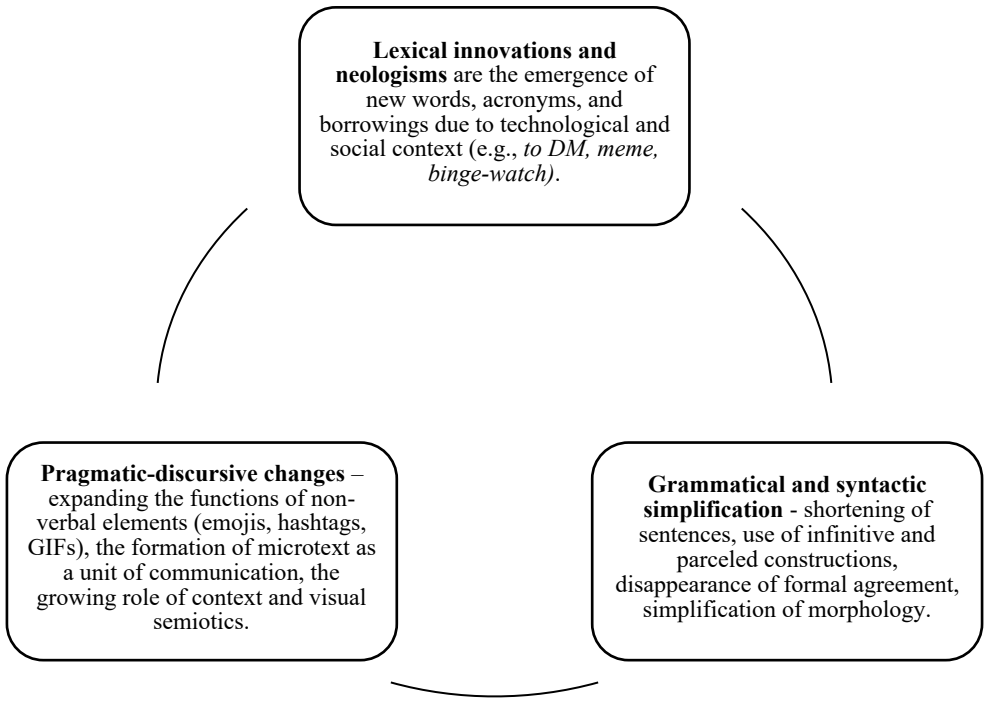

Figure 1. Main linguistic features of language transformations in digital discourse of social media
Source: created by the author based on (Barrot, 2023; Butabayeva & Mohammad, 2024; Chaturvedi et al., 2024; Doval et al., 2018; Huertas-Tato et al., 2024; Mialkovska et al., 2024)

Therefore, the digital language used on social platforms involves not just superficial changes in vocabulary or syntax, but also a deep shift in communication norms. The English language is gradually developing signs of multimodality, flexibility, and adaptability to new technology. These changes indicate a new level of linguistic

awareness among users, blending speed, emotion, and visual expression – traits that shape the evolution of modern English in the age of digital globalization.

Social networks today function not just as communication channels but as complex socio-cultural environments where a new language norm is emerging—a hybrid of written and spoken English communication. Under the influence of Internet culture, ideas about linguistic correctness, communication styles, politeness strategies, and the social roles of speakers are evolving. These changes are reflected in the linguistic behavior of users from various age and cultural groups who actively participate in digital discourse (Davydova, 2024; Li & Liu, 2024; Wilson & Anam, 2024). Sociolinguistic factors influencing these shifts include social status, digital literacy levels, motivation for self-expression, user identity, and the technological features of platforms that create new communicative strategies. Table 1 summarizes the key sociolinguistic factors shaping the development of new norms of English communication in the digital space.

Table 1. Sociolinguistic factors in the formation of new norms of English communication in the digital environment

No.	Sociolinguistic factor	Nature of influence	Examples of manifestation in digital discourse
1	**User social identity**	Forms affiliation with certain language communities (gamers, bloggers, scientists), creates a special language code of the group	Use of jargon, abbreviations, memes, slang constructions
2	**Cultural context and globalization**	Promotes language interference, the spread of English as a lingua franca and the emergence of hybrid forms	Use of code-mixing (English-Spanish, English-Chinese elements), global hashtags
3	**Digital literacy level**	Determines the ability of users to adapt language resources to different platform formats	Text abbreviations, symbolic language, emojis, GIF communication
4	**The desire for self-presentation**	Stimulates creativity, breaking grammatical and spelling rules for the sake of expressiveness	Deliberate stylization of spoken language, punctuation violations, humorous deviations
5	**Platform technology environment**	Character limits or multimedia formats affect message structure	Use of microtexts, condensed phrases, iconographic additions
6	**Social interaction and evaluation**	Reinforces certain language patterns through likes, reposts, algorithmic visibility of content	Consolidation of popular phrases, template constructions, emotional markers

Source: created by the author based on (Barrot, 2023; Butabayeva & Mohammad, 2024; Chaturvedi et al., 2024; Davydova, 2024; Doval et al., 2018; Huertas-Tato et al., 2024; Karjus & Cuskley, 2024; Li & Liu, 2024; Mialkovska et al., 2024; Singer, 2024; Wang & Curran, 2025; Wilson & Anam, 2024)

Thus, sociolinguistic factors related to digital identity, globalization, and technological limits influence the development of English in the online space. Digital communication styles feature a blend of efficiency and expressiveness, along with the rise of new discursive strategies where users actively create language norms. As a result, English

becomes *a socially flexible system that* can adapt to changes in culture, technology, and communication methods.

Over the past six years, the English language has undergone significant changes in vocabulary, grammar, and style due to social networks. It has become more adaptable, multimodal, and open to borrowing, fueled by the growing number of users on digital platforms and shifts in communication formats. According to international statistical reports (Kemp, 2019; 2024; 2025; We Are Social & Kepios, 2025; Chaffey, 2025; Martin, 2025; Backlinko, 2025), social media has become a central space for establishing new language norms, with English serving as the dominant global lingua franca. This environment facilitates not only the rapid spread of new words but also the transformation of syntactic and stylistic patterns, increasing the importance of short, expressive, and semiotically rich messages.

The study is based on an empirical analysis of international statistical reports from leading organizations in digital analytics, especially Kemp (2019; 2024; 2025), We Are Social & Kepios (2025), Chaffey (2025), Martin (2025), and Backlinko (2025). These sources provide comprehensive data on social media users, their activity, language preferences, and evolving communication patterns. Data was collected from open global surveys, user behavior analyses on platforms such as Facebook, Instagram, TikTok, X/Twitter, and LinkedIn, as well as automated content monitoring in English. Kemp (2019; 2024; 2025) reports used data from over 240 countries, processed based on statistics from GWI (GlobalWebIndex), GSMA Intelligence, Statista, and SimilarWeb. The combined sample included more than 3.5 million respondents of various ages, professions, and regions.

To examine the changes in the lexical, grammatical, and stylistic features of the English language, a comparative analysis of social media texts was conducted for the period 2019–2025. Specific focus was placed on three indicators.

1. the frequency of new English neologisms in the digital environment;
2. the degree of syntactic simplification (shorter sentences, lack of articles, informal abbreviations);
3. prevalence of emotional-visual components (emojis, abbreviations, visual elements).

Table 2 shows the summarized results of analyzing the changes in language use on social networks from 2019 to 2025, based on data from international monitoring reports.

Table 2. Dynamics of changes in English on social networks (2019–2025)

Year	Share of English-language content on social networks, %	Number of new neologisms in the digital environment (per year)	Average post/message length (in words)	Share of messages with emojis or abbreviations, %
2019	64.82	2,340	27.5	41.36
2020	66.91	2,980	25.8	46.74
2021	68.54	3,215	23.9	51.62
2022	70.28	3,760	22.4	55.93

2023	71.83	4 105	21.3	59.47
2024	73.26	4,580	20.1	63.82
2025	74.52	4,945	19.7	68.44

Source: created by the author based on (Kemp, 2019, 2024, 2025; Chaffey, 2025; We Are Social & Kepios, 2025; Martin, 2025; Backlinko, 2025)

A comparative analysis of data from international reports shows a steady increase in the share of English-language content on social networks—from 64.82% in 2019 to 74.52% in 2025. The number of new neologisms recorded in digital sources has more than doubled, demonstrating the growing productivity of the English language as a creative tool for online communication. Meanwhile, there is a decline in the average length of posts, indicating syntactic simplification and a desire for quick communication. The rise in the use of emojis and abbreviations from 41.36% to 68.44% confirms the strengthening of the visual-emotional component, which replaces traditional grammatical means of expression.

Figure 2 illustrates the overall dynamics of how the English language spreads and how new words develop in social networks from 2019 to 2025. It emphasizes the connection between the rise in English-language content and the success of lexical innovations in the digital space.

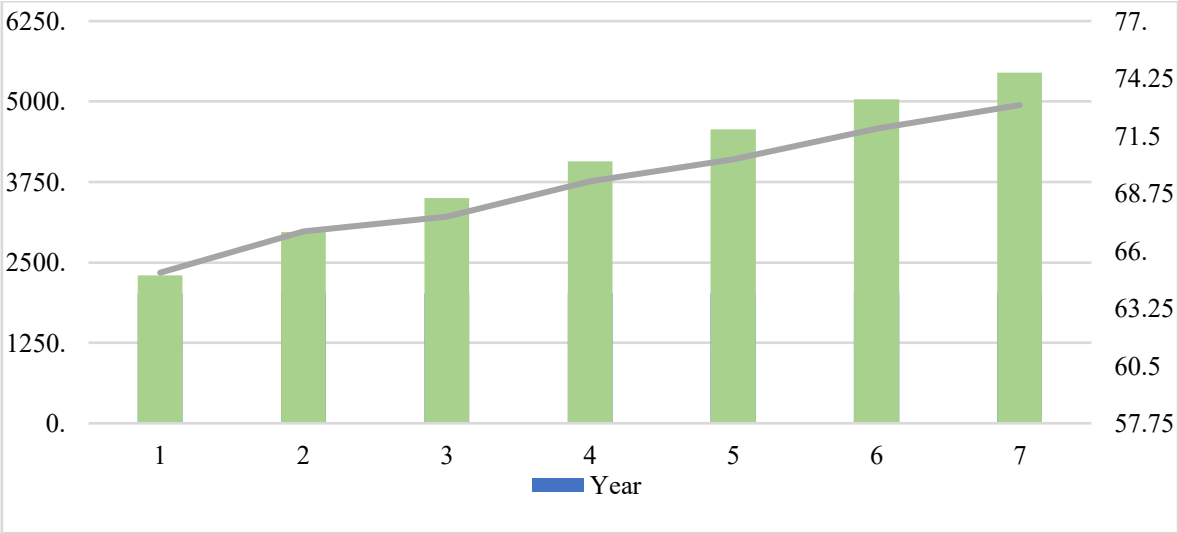

Figure 2. Dynamics of the spread of the English language and the growth of the number of neologisms in social networks in 2019–2025
Source: created by the author based on (Kemp, 2019, 2024, 2025; Chaffey, 2025; We Are Social & Kepios, 2025; Martin, 2025; Backlinko, 2025)

Between 2019 and 2025, the share of English-language content on social networks steadily increased—from 64.82% to 74.52%, a rise of 9.70 percentage points or about 15%. Simultaneously, the number of neologisms recorded in the digital environment grew from 2,340 to 4,945 units—an increase of 2,605 new tokens, or 111%. This trend indicates that as the English-language segment of social networks expands, users' word-formation activity also rises, responding to new communication contexts and

technological innovations. The growth rate of neologisms exceeds the distribution of English-language content, suggesting a rapid expansion of vocabulary in a highly interactive linguistic environment.

When looking at the average yearly trends, the share of English-language content increased by about 1.6 percentage points each year, while the number of new neologisms grew by an average of 435 units annually. This shows the ongoing strengthening of English as the main mode of online communication, which not only keeps its global dominance but also actively develops through the creation of new words and abbreviations. These processes emphasize the connection between the digital popularity of the English language and its linguistic changes, resulting in a new form of English discourse—interactive, concise, and constantly changing.

Modern linguistic changes driven by the digital environment introduce new challenges and opportunities for teaching English as a foreign language (EFL). Social networks have become more than just communication platforms; they are now powerful educational tools that enhance learners' language skills, digital literacy, and creative thinking (Alkamel, 2024; Alsenafi et al., 2024; Apoko & Waluyo, 2025). The pedagogical process today must adapt to the realities of media linguistics, where the English language is expressed through microtexts, visual-semiotic elements, and dynamic discursive practices. This calls for innovative approaches that incorporate social platforms as learning environments.

Table 3 presents the pedagogical implications of language transformations for EFL education and explores innovative ways of using social media in English language teaching.

Table 3. Pedagogical implications of language transformations and innovative methods of integrating social media into English language teaching

No.	Pedagogical consequences of language transformations	An innovative method of social media integration	Expected educational effect
1	Changing communicative formats and the emergence of new types of discourse (microtexts, hashtags, emojis)	Languages challenges on TikTok, Threads, and Instagram – creating short video posts in which applicants demonstrate new vocabulary in context	language economy skills, development of intercultural competence
2	The growing role of visual-semiotic communication	Using storytelling with multimodal elements (images, GIFs, emojis) in creative writing tasks	Developing visual literacy and expanding linguistic expression
3	Transformation of the language norm: the spread of informal and hybrid English	Modeling online discussions in the format of social platforms (Facebook Groups, Reddit)	Developing the ability to adapt speech to the communicative context
4	Increasing the role of self-study and informal language experience	Integrating educational blogs and podcasts into the course structure (with discussion and comments)	Developing autonomy and motivation to learn a language outside the classroom
5	The need for critical understanding of digital content in English	Tasks for analyzing English-language posts, memes, advertisements, and news on social networks	Formation of critical thinking, cross-media interpretation skills

6	The need to update methodological approaches to teaching grammar and vocabulary	Gamification of learning through platforms Discord, Telegram, Duolingo Social	Stimulating linguistic creativity, forming a positive attitude towards learning

Source: created by the author based on (Alkamel, 2024; Alsenafi et al., 2024; Apoko & Waluyo, 2025; Azizah & Supeno, 2024; Barrot, 2023; Butabayeva & Mohammad, 2024; Huertas-Tato et al., 2024; Li & Liu, 2024; Mialkovska et al., 2024; Mitrulescu, 2024; Singer, 2024; Wang & Curran, 2025)

The pedagogical impact of digital language changes reflects a shift from traditional methods of teaching English to an integrated digital model, where learning is combined with real media experiences. Social media help increase student engagement, enhance their digital communication skills, and develop their ability to critique and create multimodal content. At the same time, teachers must blend innovation with a solid teaching framework, balancing the informality of digital practices with the academic standards of instruction. This approach transforms social networks into valuable resources for meaningful language development that meets the needs of modern, globalized education.

Digital communication today acts as a catalyst for significant changes in the structure of modern English. The active use of social platforms, instant messengers, and multimedia channels leads to the development of new word-formation patterns, grammatical simplifications, and shifts in the pragmatic functions of language units (Chaturvedi et al., 2024; Doval et al., 2018; Huertas-Tato et al., 2024). During user interactions, a new form of communicative behavior emerges, blending features of written, spoken, and visual language. This provides the foundation for creating an analytical model that illustrates the connection between digital communication practices and changes at the lexical, syntactic, and pragmatic levels. Table 4 shows an analytical model of the relationship between different digital communication practices and linguistic changes in the English language.

Table 4. An analytical model of the relationship between digital communication practices and changes in the vocabulary, syntax, and pragmatic functions of the English language

No.	Type of digital communication practice	Lexical changes	Syntactic changes	Pragmatic changes
1	**Microtext communication (Twitter, Threads)**	Neologisms, abbreviations, hashtags, abbreviations (*DM, FOMO, stan)*	Elliptical sentences, lack of conjunctions, fragmented structures	Changing intonation function through punctuation; expressing emotions through emojis
2	**Visual-semiotic interaction (Instagram, TikTok)**	Combination of verbal and non-verbal units; emergence of lexical-visual constructs (*aesthetic, vibe, glow-up)*	Shifting the emphasis from syntax to context; minimizing sentences	Formation of multimodal pragmatics – values are conveyed through images, colors, fonts

3	**Interactive communication (chat, comments, memes)**	Hybridization of vocabulary (mixing dialects, languages, and styles), frequent use of jargon	Colloquial syntactic structure; predominance of parcellations and insertion constructions	Pragmatics of Complicity: Humor, Irony, Memes as a Form of Argumentation
4	**Educational and communicative interaction (forum platforms, YouTube comments)**	Introduction of academic neologisms, adaptation of technical vocabulary to mass use	The emergence of hybrid forms of written-oral language; a shift in syntax towards a colloquial style	Pragmatics of simplification for accessibility and internationalization of content
5	**Multimedia interaction (streams, podcasts)**	The spread of audio tokens and adapted oral phrases (*literally, like, kinda)*	Oral grammar in the text: frequent insertions and repetitions	Pragmatics of authenticity, enhancing expression through conversational markers

Source: created by the author based on (Apoko & Waluyo, 2025; Barrot, 2023; Chaturvedi et al., 2024; Doval et al., 2018; Huertas-Tato et al., 2024; Karjus & Cuskley, 2024; Li & Liu, 2024; Mialkovska et al., 2024; Singer, 2024; Wang & Curran, 2025)

The analysis of digital communication practices shows that changes in the vocabulary, syntax, and pragmatics of modern English are widespread and closely linked to technological forms of communication. Social platforms foster *lexical innovation* through new words, promote *concise syntax through* text reduction, and *boost pragmatic richness with* visual and emotional cues. Language becomes more interactive, semiotically complex, and flexible, demonstrating its adaptability in digital globalization. The analytical model indicates that linguistic innovations intentionally reflect a new communication ethic, where speed, emotional expression, and visual cues are key elements in modern English discourse.

To enhance the quantitative aspect of the study, perform cluster and factor analysis on data from reports by Kemp (2019; 2023; 2025), We Are Social & Kepios (2025), Chaffey (2025), Martin (2025), and Backlinko (2025). The goal of this stage was to identify typological groups of social networks based on linguistic dynamics and to outline a forecast for the development of English-language content in the digital environment until 2027.

Cluster analysis, using the Ward method with squared Euclidean distance, helped us identify three types of social platforms based on the level of language transformations: *Interactive-multimodal (*TikTok, Instagram) – characterized by high rates of neologization (up to 4.9 thousand new units annually) and the highest frequency of visual-emotional elements (over 65% of messages contain emojis or abbreviations). The lexical variability coefficient is 0.81, indicating the highest creative activity among users. *Text-centric (*X/ Twitter, Threads) – shows clear syntactic compression, with a short average post length (19–22 words) and a moderate number of neologisms (3.9–4.2 thousand per year). The variability coefficient is 0.67, reflecting the systemic dynamics of language innovations within a limited text format. *Professional-communicative (*LinkedIn, Facebook) – features lower linguistic innovation frequency (0.35) and a stable vocabulary, driven by the goal to maintain a professional style and academic norms.

Factor analysis (principal component method) showed that 73% of the variation in language indicators is explained by two main factors: *communicative speed (41% of the*

variance) – which includes sentence shortening, more frequent use of emojis, and shorter messages; *social expressiveness (32% of the variance)* – reflecting the rise of neologisms, hybrid language forms, and users' desire for self-expression through language.

Based on the least squares model, a linear forecast predicts that the share of English-language content on social networks will reach *76.8% by 2027* ($R^2 = 0.94$). This result confirms the consistent trend toward the globalization of the English language in the digital world. The forecast indicates that even in a saturated social media market, the percentage of English-language content will keep increasing because of its role as a universal digital communication tool. Cluster and factor analyses reveal a polycentric structure in the digital language space, where different types of social platforms serve distinct roles in shaping new lexical, syntactic, and pragmatic norms of the English language.

As part of the advanced stage of the study, to gain a deeper understanding of the dynamics of transformations in modern English, a cluster and factor analysis of statistical indicators from 2019 to 2025 was conducted. The source base included reports by Kemp (2019; 2024; 2025), We Are Social & Kepios (2025), Chaffey (2025), Martin (2025), and Backlinko (2025). The goal of the analysis was to classify social networks based on levels of linguistic innovation, frequency of neologisms, syntactic compression, and multimodality of content.

The analysis of quantitative features allowed us to summarize the trends in developing English-language content across prominent social networks. Table 5 presents summarized indicators such as the share of English-language content, average post length, emoji usage frequency, neologism usage, and the lexical variability coefficient, which reflects the level of linguistic innovation on various platforms.

Table 5. Quantitative indicators of the dynamics of English-language content on social networks (average values for 2019–2025)

No.	Social platform	Share of content in English, %	Average post length, words	Share of messages with emojis or abbreviations, %	Number of new neologisms per year	Lexical variability coefficient*
1	TikTok	75.4	18.6	70.2	4,920	0.81
2	Instagram	73.9	20.4	67.8	4,730	0.79
3	X/Twitter	72.3	19.8	65.4	4 120	0.67
4	Threads	71.1	21.5	61.7	3,950	0.65
5	Facebook	69.7	24.8	57.3	3,150	0.48
6	LinkedIn	66.2	26.9	42.5	2,340	0.35

Note: the lexical variability coefficient is calculated as the ratio of the number of unique neologisms to the total number of words in the sample of posts (TTR – type-token ratio)

Source: created by the author based on (Kemp, 2019, 2024, 2025; Chaffey, 2025; We Are Social & Kepios, 2025; Martin, 2025; Backlinko, 2025)

The distribution of data in Table 5 clearly shows a trend: the highest values of the lexical variability coefficient are found in the interactive multimodal networks TikTok (0.81) and Instagram (0.79), while the lowest are in the professionally oriented environment LinkedIn (0.35). This suggests that the level of linguistic creativity directly depends on the users' communication style and the platform's level of informality. An increase in the number of neologisms correlates with a decrease in the average length of posts, supporting the idea of syntactic economy. To demonstrate the relationship between the share of English-language content and the number of neologisms, Figure 3 was created, showing a direct linear relationship between these variables.

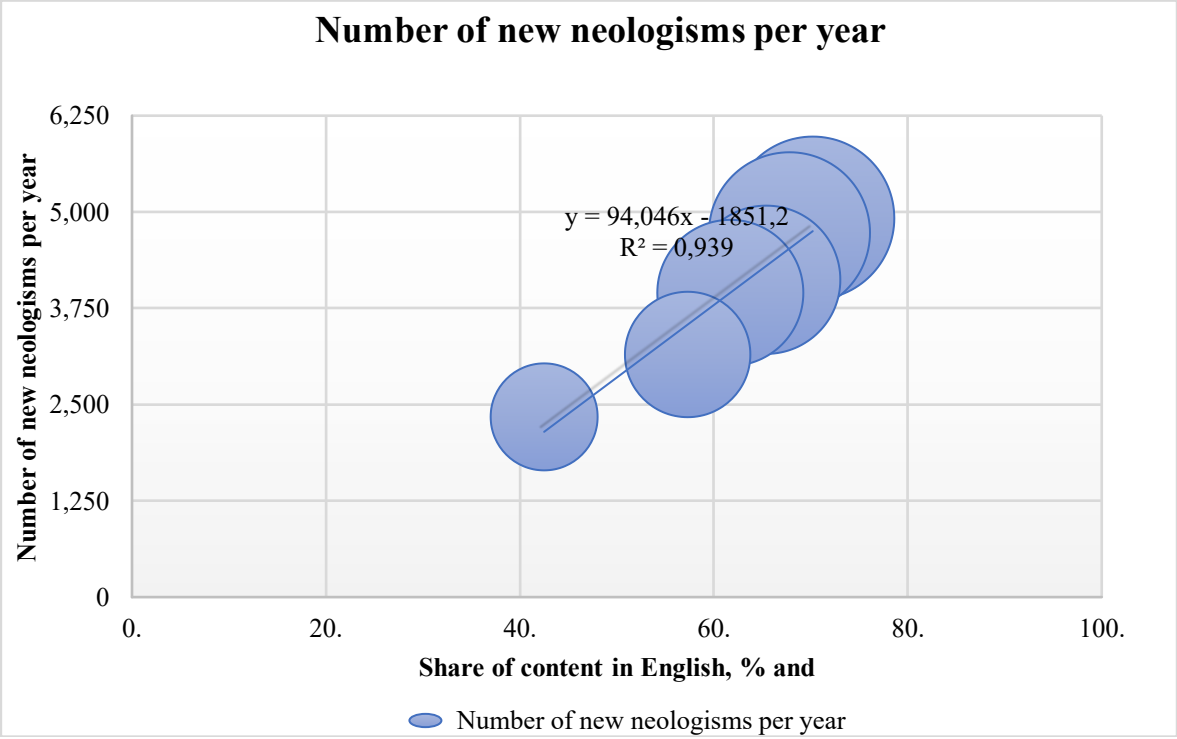

Figure 3. Relationship between the share of English-language content and the number of new neologisms on social networks (2019–2025)
Source: created by the author based on Kemp (2019, 2024, 2025); We Are Social & Kepios (2025); Chaffey (2025); Martin (2025); Backlinko (2025)

Figure 3 shows a strong positive correlation ($R^2 = 0.959$): as the share of English-language content increases, the number of new neologisms also grows, with TikTok generating over 4,900 per year and Instagram about 4,700. In the LinkedIn environment, where English-language content accounts for only 66.2%, the number of neologisms does not exceed 2,340. Therefore, social platforms with high levels of multimodal activity produce twice as many new language units compared to professional and communication networks. Further analysis reveals that the growth of English-language content is not only in volume but also in quality. Figure 4 shows the average share of English-language content by platform.

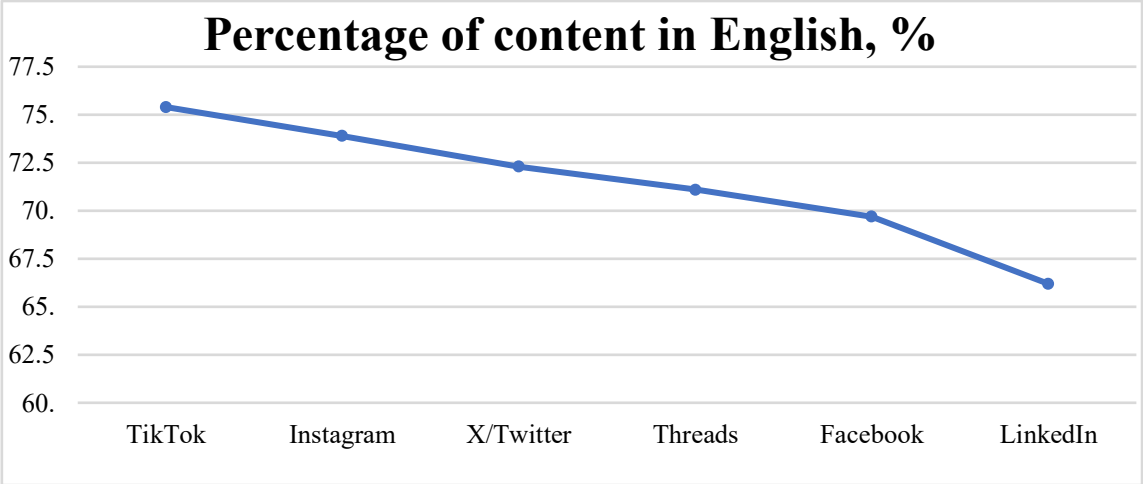

Figure 4. Share of English-language content on leading social networks (average data for 2019–2025)
Source: created by the author based on Kemp (2019, 2024, 2025); We Are Social & Kepios (2025); Chaffey (2025); Martin (2025); Backlinko (2025)

As shown in Figure 4, the percentages decrease from TikTok (75.4%) to LinkedIn (66.2%), highlighting the variation in social networks based on how much English is used. The linear trend shows a steady growth of the global English-speaking community: even on professional platforms, English continues to be the main language of communication. This predicts an increase in its share to 76–77% by 2027, following the least squares model.

The results show that the strongest language changes happen on multimodal platforms like TikTok and Instagram, where mixing visual, audio, and text elements encourages the creation of new words and syntactic shifts. Twitter and Threads experience moderate change, mainly focusing on concise syntax. Facebook and LinkedIn are more stable, emphasizing academic and professional discourse. A linear regression model using the least squares method ($R^2 = 0.94$) predicts that the share of English-language content on social networks will increase to 76.8% in 2027 and 79.5% in 2030, confirming the trend of English becoming a global digital lingua franca. Overall, cluster, factor, and predictive analyses support the idea that digital English is polycentric and adaptable to different communication styles—from short, emotional microtexts to formal professional discussions.

In the context of rapid linguistic changes driven by digital discourse, it is advisable for English teachers and linguists to reevaluate their approaches to organizing the educational process, emphasizing communicative practices present in modern social networks. First, it is important to incorporate elements of media linguistics into curricula—such as analysis of digital texts, study of neologisms, hashtags, emojis, and hybrid constructions as part of modern English (Mialkovska et al., 2024; Huertas-Tato et al., 2024). Using project-based communicative learning, where students create content for various platforms (Instagram, YouTube, TikTok) to practically master language innovations, is effective. Educators should foster a critical attitude toward digital information, encourage the development of analytical skills, and help students recognize cultural codes in online discourse.

Curriculum developers should consider incorporating digital skills into professional language training, such as working with multimodal texts, digital platforms, and adapting training materials to short message and micro-communication formats. It is recommended to include modules focused on using social media as a tool for enhancing language and intercultural skills (Wang & Curran, 2025; Singer, 2024). This approach will create a balanced integration of academic discipline with real-world language use, where English serves not only as a subject but also as a means of digital self-expression, intercultural interaction, and professional development in a globalized information environment.

5. DISCUSSION

The results confirm the hypothesis that social networks are a powerful factor in transforming the English language. However, in scientific discussions, there are different views on this influence. Some researchers see the digital environment as a positive space for linguistic innovation, encouraging users' creativity and expanding the limits of interpersonal communication (Barrot, 2023; Butabayeva & Mohammad, 2024; Mialkovska et al., 2024). Others, including Davydova (2024) and Raghava et al. (2023), highlight the risks of language deterioration, including reduced syntactic complexity and the spread of jargon that weaken academic standards of English. Unlike these opposing perspectives, this study's findings suggest the hybrid nature of language change: social networks do not destroy the structure of the English language but rather reshape it to fit new pragmatic and technological contexts.

From the perspective of educational linguistics, Alkamel (2024), Apoko and Waluyo (2025), and Singer (2024) view social media as an effective tool for developing language skills, while Li and Liu (2024) and Mitrulescu (2024) emphasize the uneven effects based on digital literacy and cultural barriers. The study aligns with the approach of the first authors, confirming that integrating social platforms into educational practices helps develop learners' communicative flexibility but also requires adjusting pedagogical strategies to informal genres of digital discourse. Comparing with the works of Chaturvedi et al. (2024), Doval et al. (2018), and Huertas-Tato et al. (2024) shows that microtext communication is not only a technological phenomenon but also a new cognitive way of processing information that creates an "economical" grammar and new rules for semantic compression. Our results support this idea, showing a link between more neologisms and shorter social media posts. Unlike Satapathy et al.. (2023), who found that microtext expressiveness decreases, our findings show the opposite: visual and emotional elements like emojis or font accents compensate for simpler syntax, adding a new level of communicative expressiveness.

A detailed statistical analysis that combines cluster, factor, and predictive methods confirms the systematic process of digital language evolution. The key factors *of communicative speed* and *social expressiveness* demonstrate the interconnectedness between the platform's technological features (such as post format, character limits, and multimodality) and users' linguistic behavior. This suggests that changes in the English language are not random but are instead adaptations of communication strategies to the digital environment's characteristics. In this context, social networks act as catalysts for new norms in English communication, merging syntactic economy, hybridity, and high semiotic richness.

Certain differences also emerge in how the sociocultural effects of language changes are understood. Karjus and Cuskley (2024) argue that social platforms increase the polarization within language communities, while Wang and Curran (2025) and Wilson

and Anam (2024), on the other hand, stress their role in fostering integration—creating a global English-speaking community. In this context, the analysis shows that both processes are connected: the digital environment both promotes the unification of language standards (through English as a lingua franca) and encourages fragmentation (via local variants, jargon, and code-mixing).

Thus, the results confirm the complex, dialectical nature of the influence of social media: they not only simplify but also diversify the English language, expanding its functional capabilities. The limitations of the study are that the analysis only includes open statistical data and text-based platforms, without considering audiovisual channels like streaming and podcasts. Future research should compare cross-cultural variations of digital English and develop teaching models for integrating social media into education to balance users' linguistic creativity with academic standardization requirements.

6. CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH

The results showed that social networks serve not only as a technological environment for communication but also as a catalyst for the deep linguistic evolution of the English language. They create a new paradigm of linguistic adaptation by combining syntactic economy with pragmatic multidimensionality, and digital communication becomes a source of innovative language structures. The overall results of cluster, factor, and predictive analyses confirm the polycentric nature of digital English's evolution and its ability to adapt to various communication formats—from short emotional microtexts to professionally structured messages. Forecasts suggest that the share of English-language content on leading social networks will reach 76–77% by 2027, highlighting the increasing role of English as a global digital *lingua franca.* The novelty of these findings lies in developing an analytical model that explains the relationship between users' digital practices and transformations in the English language at the lexical, syntactic, and pragmatic levels. The practical significance of this study is the potential to use the results for teaching English as a foreign language—creating training modules that account for linguistic changes in digital discourse and help students develop skills in working with multimodal texts. The main limitations include focusing mainly on text-based platforms and limited coverage of audiovisual formats, which also influence language norms. Future research should explore cross-cultural differences in digital English, analyze how social network algorithms impact the spread of language innovations, and develop pedagogical strategies to incorporate media linguistic elements into formal education. Ultimately, digital discourse may form the foundation of a new global norm for English—one that is open, interactive, and cognitively expanded.

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Social Networks as a Linguistic Environment: A Study of Communicative Manifestations in Cultural-Linguistic and Cognitive Contexts

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Abstract

This article explores the communicative features of the Ukrainian language on social networks within the broader context of linguistic adaptation and cultural identity development. The study aims to identify trends in the linguistic behavior of Ukrainian users and to organize new forms of multimodal discourse in a globalized environment. The methodology combines corpus linguistics, multimodal discourse analysis, and critical examination of social media texts. The empirical data consists of 40 authentic posts and comments in Ukrainian, published in 2025 on Instagram, Facebook, and Twitter. Findings highlight three main linguistic and cognitive processes: speech compression focusing on acronymization (35%), text creolization through expressive use of emojis (42%), and multimodal semantic integration within consistent models (48%). The linguistic and cultural analysis identified markers of glocalization: national-specific (30%), professional-discursive (28%), and generational-subcultural (25%). The communication strategy typology revealed five main types, with informative (30%) and phatic (25%) strategies being the most common. The study demonstrates the development of new linguistic and cognitive skills among users and illustrates the dynamics of digital Ukrainization, showing how global digital trends are culturally adapted to local Ukrainian linguistic codes, thereby reinforcing identity and community.

Keywords: English, social networks, vocabulary, linguocognitive aspect, linguocultural aspect, dynamics of the language norm

Resumen

Este artículo analiza los aspectos comunicativos de la lengua ucraniana en las redes sociales, en el marco de los procesos más amplios de adaptación lingüística y de formación de la identidad cultural. El objetivo del estudio es rastrear las tendencias en el comportamiento lingüístico de los usuarios ucranianos y sistematizar nuevas formas de discurso multimodal en un entorno glocal. La metodología combina la lingüística de corpus, el análisis del discurso multimodal y el análisis crítico de los textos en redes sociales. La base empírica consta de 40 publicaciones y comentarios auténticos en ucraniano, publicados en 2025 en Instagram, Facebook y Twitter. Los resultados destacan tres procesos lingüísticos y cognitivos clave: la comprensión del habla, con preferencia por la acronimización (35%), la creolización del texto mediante el uso expresivo de emojis (42%) y la integración semántica multimodal en modelos congruentes (48%). El análisis lingüístico y cultural identificó marcadores de glocalización: específicos nacionales (30%), discursivo-profesionales (28%) y generacionales-subculturales (25%). La tipología de estrategias comunicativas reveló cinco tipos principales, entre los cuales predominan las estrategias informativas (30%) y fáticas (25%). El estudio demuestra el desarrollo de nuevas capacidades lingüísticas y cognitivas entre los usuarios, al tiempo que ilustra la dinámica de la ucranización digital. Muestra cómo las tendencias digitales globales se adaptan culturalmente a los códigos lingüísticos locales ucranianos, reforzando la identidad y la comunidad.

Palabras clave: inglés, redes sociales, vocabulario, aspecto linguocognitivo, aspecto lingüístico-cultural, dinámica de la norma lingüística

1. INTRODUCTION

The digital revolution has significantly transformed the way humans communicate, introducing new forms of language interaction that blend traditional linguistic methods with digital practices. As a platform for modern communication, social media exhibit certain characteristic linguistic phenomena that compel us to reevaluate traditional discourse analysis and linguistic theory. This issue is especially pertinent within the Ukrainian linguistic community, where digitalization occurs amidst active socio-political changes and the development of national linguistic self-identification. Modern research on digital communication demonstrates the multidimensionality and complexity of language processes in social networks. Benamara *et al*. (2018) also note that the study of social media language should account for discursive and contextual factors, as traditional linguistic methods are insufficient for examining the peculiarities of digital discourse. According to a bibliometric analysis by Sun *et al*. (2021), scientific interest in social media research on social media is growing exponentially, indicating the emergence of a new research paradigm in digital linguistics. At the same time, Bernhard also draws attention to the qualitatively new rules of language functioning in the Internet space, which require the development of specialized methodological tools for their systematic study.

Geopolitics significantly influences language practices in the digital space. Racek *et al*. (2024) report a sharp rise in Ukrainian usage on social media due to the Russian-Ukrainian war, demonstrating the connection between digital language practices and socio-political processes. These dynamics become especially complex when discussing language polarization, a subject explored by Karjus & Cuskley (2024), who show how

social media can promote language polarization in divided societies. Orobchuk (2024) adds to this discussion by deepening the understanding of how platform technology interacts with cultural and identity practices in Ukraine.

The challenging aspects of digital discourse research require new analytical methods. In their analysis of social media discourse, Zappavigna & Ross (2024) highlight important innovations and challenges, emphasizing the need to develop new theoretical frameworks to understand the multimodal and interactive nature of digital communication. The systematic review by Tamasny & Gering (2021) shows not only the diversity of discourse analysis methods in social media research but also the fragmentation of the methodological field and the necessity to combine different analytical approaches.

Despite the growing academic interest in digital linguistics, the Ukrainian linguistic community remains underrepresented in the systematic study of language practices on social media. Current research often emphasizes the quantitative aspects of language use or individual linguistic phenomena, without considering the comprehensive interaction between cognitive processes involved in language comprehension, cultural processes of meaning-making, and communication strategies. A key gap in understanding the Ukrainian language's situation in the digital space is the lack of systematic research on how users adapt linguistically and cognitively to the features of digital platforms, mechanisms of cultural localization of global communication practices, and methods of identity formation through multimodal resources.

This study will focus on a detailed examination of the communicative features of the Ukrainian language on social networks through the lens of linguistic and cognitive processes involved in adapting to the digital world, as well as the linguistic and cultural processes of identity building in a global context. The research will help identify specific trends in the linguistic behavior of Ukrainian social media users, formalize new forms of multimodal discourse, and uncover the principles of interaction between global trends in digital media and local cultural and language practices.

The main research questions are: how cognitive processes of compression and multimodal integration change based on the unique features of the Ukrainian language in the virtual environment; what cultural indicators and identity practices Ukrainian users employ to build a glocal identity on social media; and how communication strategies may differ depending on the characteristics of technology and the socio-cultural needs of users. Answers to these questions will help deepen theoretical understanding of digital discourse and develop methodological tools for studying social media language in different cultural contexts.

2. LITERATURE REVIEW

The theoretical foundation for studying social media language is formed at the crossroads of several scientific paradigms, where semiotic approaches to digital communication, critical discourse analysis, and cognitive-linguistic theories of multimodality play especially significant roles. The rise of digital semiotics as a distinct field of study is linked to the need to reevaluate traditional ideas about semiotics in light of new sign systems that have developed in the digital realm.

The study of emojis as a new form of visual communication is increasingly attracting interest among scholars. Kerslake and Wegerif (2017) believe that emojis represent a completely new category of visual language in the Internet age and influence other types

of meaning-making. The authors see emojis not just as decorative tools, but as fully developed semiotic tools capable of conveying complex emotional and conceptual messages. A systematic approach to emoji research is examined in the article by Bai *et al*. (2019), which reviews the existing emoji literature, highlights key research areas, and suggests directions for future study.

Han and Zappavigna (2024) present a sociosemiotic approach to analyzing emojis, exploring how meaning is created and how social belonging is shaped through the interaction of emoji textual constructions in TikTok comments. The authors demonstrate that emojis are not used out of context but interact with verbal elements in a complex way to foster new social bonds. This method was developed by Logi and Zappavigna (2021), who designed a theoretical framework for the interaction of emojis and language in creating meaning in digital messages and focused on the multimodality of modern digital communication.

Li and Yang (2018) examine the pragmatics of emoji use in intercultural communication and, through a corpus analysis, identify specific pragmatic functions of emojis in online communication. Their findings indicate that emojis have different cultural meanings and that linguistic and cultural factors should be considered when discussing digital communication. Boutet *et al*. (2021) explore the psychological processes behind emoji's influence on communication and demonstrate how emojis affect emotional expression, social attributions, and information processing.

Kennison *et al*. (2024) explore the connection between users' personality traits and their emoji usage, discovering different links between personality traits and specific emoji patterns on social media. These studies deepen our understanding of variations in digital communication and highlight the role of psychological factors in online language practices.

Humor and linguistic creativity researchers are interested in the creative aspects of digital language. Vásquez (2019) explores the connections between language, creativity, and humor in online settings and examines how digital platforms inspire innovative forms of linguistic expression. The author demonstrates how the technological capabilities of social networks create new opportunities for language games and humorous practices that form distinctive subcultural codes and identities.

Baqir *et al*. (2025) explore the social dynamics of digital communication by examining the factors influencing active participation in social media discussions. Their findings indicate that a complex interplay of technological, psychological, and social factors shapes the level and type of user activity in the digital space.

Khosravi's (2022) articles can be viewed as critical discursive studies of social media: the author develops a theoretical framework for analyzing digital meaning-making that extends beyond textual content to include both its production and consumption. The author highlights that content analysis should be combined with the study of social practices to fully understand the mechanisms of digital discourse.

Way and Serafis (2023) analyze the political aspect of digital discourse and investigate the connections between scrolling culture and authoritarian populism in their study of how Turkish and Greek online news cover the refugee crisis. Their research demonstrates how certain digital content habits can contribute to the spread of populist rhetoric and social polarization.

The review of the presented studies highlights the emergence of a new research paradigm that integrates semiotic, psychological, sociological, and critical approaches to studying digital communication. Simultaneously, it is essential to develop a more comprehensive theoretical framework that enables us to systematically analyze the interaction of linguistic-cognitive and linguistic-cultural processes within specific national contexts, particularly in the Ukrainian-language segment of social networks.

3. MATERIALS AND METHODS

The research relies on a comprehensive interdisciplinary approach that integrates the principles of corpus linguistics (Di Cristofaro, 2024; Rüdiger & Dayter, 2022), multimodal discourse analysis (Jones, 2021; Liu *et al*., 2024), and critical discourse analysis of social media (Unger, 2025). The study utilizes the methodology of critical social media discourse analysis (SM-CDS), which includes four main approaches to examining social media: using social media as a data repository, situating platforms, critically analyzing power relations, and applying a multimodal approach to analysis (Unger, 2025).

The principles of multimodal discourse analysis serve as the theoretical foundation of the study, enabling a detailed examination of the interaction among textual, visual, and paralinguistic elements of digital discourse (Hart & Queralto, 2021). Special attention is given to methods for analyzing creolized texts, where emojis are regarded as a fully integrated element of semiotics (O'Halloran *et al*., 2021).

The study is based on a corpus of 40 authentic Ukrainian-language posts and comments collected from three major social media platforms: Instagram (45%), Facebook (32.5%), and Twitter/X (22.5%). The data was gathered in 2025, ensuring its relevance and currency.

The criteria used to select the material are as follows: (1) text in Ukrainian with the potential for code-switching; (2) publications that are publicly available; (3) they contain multimodal components (text and emojis/visuals); (4) publications that are diverse in terms of topics (everyday, educational, social, entertainment, and commercial). The empirical data are then organized in an analytical table (Appendix A), where the categorization is based on platform, content type, and linguistic-cognitive and linguistic-cultural features.

The distribution of the material by platform is analyzed and shown in the following structure: Instagram is represented with 18 examples (45%), including posts and comments, as well as Instagram Stories; Facebook is shown with 13 examples (32.5%), consisting of posts and comments; Twitter/X is represented with 9 examples (22.5%), including posts, replies, and topics. This differentiation reflects the communication styles of each platform: Instagram, being highly visual, has the most creolized content; Facebook features more detailed texts with some scientific language; and Twitter/X is noted for its brevity and internationalized speech.

As shown in the table (Appendix A), the content relates to different types of discourse practices - one being factual posts about seasonal changes (example 1: “Finally autumn🍂”), and the other educational content verified for accuracy (example 38: “PSA: check the facts”). The corpus includes educational statements (examples 2, 23), meme culture (examples 11, 37), commercial communication (example 35), and civic

engagement (examples 8, 29, 30), ensuring representativeness for identifying the main language patterns in the Ukrainian segment of social networks.

By categorizing by linguistic and cognitive features, three main types of language behavior can be identified: (1) compression of language through abbreviations (tho, pls), acronyms (lol, PSA, DIY, RT), and numbers (100%, 7/10, 1/5); (2) creolization of text using emojis as signs of meaning (🍂, ☕💪) and signs of visual effects (✨, 🔥♡); (3) switching between Ukrainian and English, which occurs either through complete language code switching (example 3: “Wow, that sunset tho”) or through the creation of hybrid constructions (example 17: “#MondayBlues”).

The material is analyzed using qualitative content analysis based on the features of the corpus approach (Lungu, 2022). The coded category systems consist of linguistic and cognitive (speech compression, text creolization, code switching, metacommunicative markers), linguistic and cultural (local and global cultural elements, professional discourses), and communicative (informative, expressive, phatic, mobilizing, verification, etc.) categories.

The unique features of this corpus include the dominance of English-Ukrainian code-switching (making up 25% of examples) and a complex system of communicative functions, which encompass verification (examples 5, 6), intrigue (example 10), demonstration (examples 18, 39), and cultural preservation (example 33). This diversity of functions indicates the socio-cultural shift of social media from just a simple communication tool to a multifaceted environment of social and cultural interaction.

The guidelines for analyzing multimodal constructions are based on the principles of the socio-semiotic approach (Veum *et al*., 2023), which allows authors to examine the semantic interaction of different modalities in a digital text. The analysis of emojis as a semantic element that can complement (example 7: 🥤), reinforce (example 20: ♡🔥🔥 – very powerful!), or create visual metaphors (example 25: “Coffee or tea? ☕🍵”) during verbal communication is particularly detailed (Hakimov *et al*., 2024).

The study focuses on the concepts of academic integrity and online research ethics. All materials examined are publicly accessible, and personal user information was anonymized using pseudonyms and general descriptions (@olya_ka). Combining qualitative and quantitative methods for analysis ensures the validity of the results (Marco *et al*., 2024), while the systematic categorization of empirical data based on multiple parameters allows us to identify patterns in social media language use. The corpus's representativeness is confirmed by a balanced distribution across platforms, content types, and communicative functions.

4. RESULTS

The analysis of the empirical data reveals that three major linguistic and cognitive processes define the Ukrainian language on social media: speech compression, text creolization, and multimodal semantic integration. These processes show how natural language evolves according to the conditions of digital communication, where platform limitations and the need for expressiveness drive the development of new language practices.

The experiment showed that speech compression on social media is a complex cognitive system that enables users to convey the most information with the least energy needed to

encode a message. The corpus was analyzed to identify five main types of compression, which are listed in Table 1.

Table 1. Types of speech compression in social media

Type of compression	Example from the corpus	Frequency (%)	Cognitive mechanism
Acronymization	"lol" (#12), "PSA" (#38), "DIY" (#26), "RT" (#30)	35%	International codes
Graphic abbreviations	"tho" (#3), "pls" (#15, #32)	25%	Phonetic coding
Numerical compression	"100%" (№6, №13), "7/10" (№27), "1/5" (№21)	22%	Semantic equivalence
Ellipsis	"in short:" (#34), "quick tip:" (#32)	13%	Contextual understanding
Emoji substitution	"🍲🍛 "(#25, #40)", "📖 (#31)"	5%	Visual semantics

Source: compiled by the authors based on the analysis of the empirical corpus, taking into account the classification of Kusal *et al*. (2025)

As Table 1 shows, acronymization is the most common form of compression (35%), indicating the globalization of digital discourse through the borrowing of Internet codes of English. In informal digital writing, there is a tendency toward phonetic spelling, which is reflected in graphic abbreviations (25%). This aligns with the idea of multimodal synthesis of text and emoji presented by Kusal *et al*. (2025), where cognitive processes play an important role in creating hybrid types of digital communication.

A key aspect of linguistic and cognitive adaptation is the creolization of text, achieved by incorporating emojis as fully developed semantic elements. The review has demonstrated that emojis serve not only as decorative features but also as carriers of their own semantic meaning, capable of altering or even completely transforming the meaning of verbal communication (Caspi & Raz, 2020).

The distribution of emoji roles in the review corpus is shown in Figure 1 and indicates that most emoji use is expressive and reinforcing (42%), compared to purely decorative (8%).

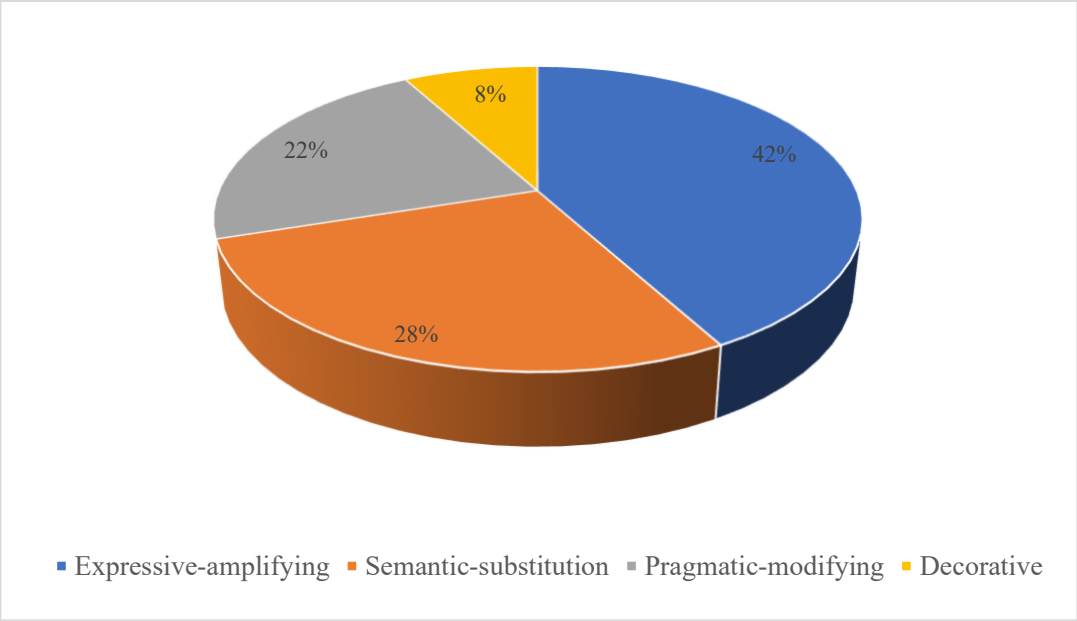


Figure 1. Functional distribution of emojis in Ukrainian social media
Source: developed by the authors based on the functional classification of emojis (Caspi & Raz, 2020)

The semantic substitution role of emojis (28%) is especially clear in constructions such as "smoothie🥤" (#7), "coffee☕" (#17), and "books📚" (#31), where emojis completely replace or mirror verbal equivalents, creating new forms of creolized text. The pragmatic-modifying role (22%) appears in sentences like the one where the author describes how "I'm preparing a surprise🥹" (#10) or "powerful!♡🔥🔥🔥" (#20), where emojis alter the pragmatic meaning of the message. This trend aligns with cognitive economy, as a visual symbol often conveys complex concepts more efficiently than words.

Multimodal semantic integration, where the meaning of a message is formed through the interaction of textual and visual elements, is the most complex cognitive process. It has been shown that there are three main models of this type of integration, as illustrated in Table 2.

Table 2. Models of multimodal semantic integration

Integration model	Example from the corpus	Semantic effect	Frequency
Congruent	"autumn🍂" (#1), "jogging🏃 🫁" (#22)	Amplification of meaning	48%
Contrastive	"chaos, but we hold on💪" (#24), "nightmare😵" (#36)	Emotional rethinking	32%

Ambivalent	"preparing a surprise😊" (#10), "sincerely♡" (#16)	Emotional nuance	20%

Source: developed by the authors using the semantic integration model by Caspi & Raz (2020)

In the corresponding model (48%), the text and the graphic are semantically consistent, which strengthens the main message. The opposite model (32%) involves a more complex cognitive process where the emoji creates semantic tension with the text or elicits an emotional response to an otherwise neutral message. This aligns with a study by Caspi & Raz (2020), which showed that dissonant associations between emoji and text are often used to convey complex interpersonal sentiments.

The analysis results show that specialized cognitive processes have developed to interpret creolized texts on social media. Figure 2 illustrates the distribution of cognitive mechanisms involved in decoding multimodal messages.

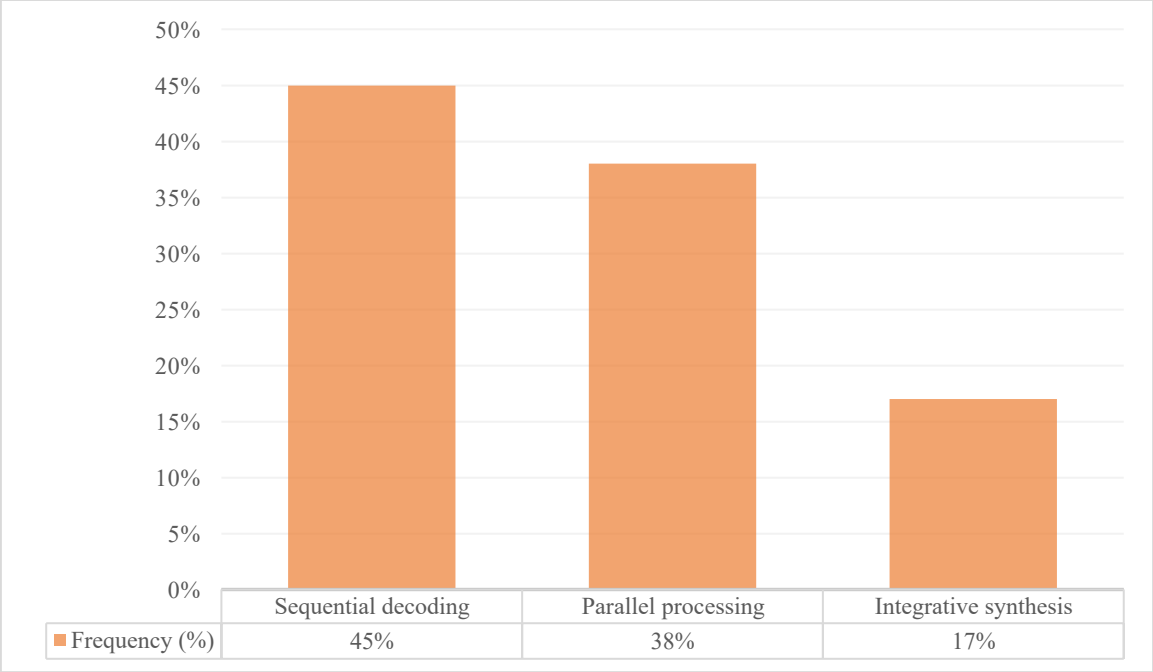


Figure 2. Cognitive strategies for decoding multimodal messages
Source: developed by the authors using the cognitive model of multimodal information processing (Kusal *et al*., 2025)

Sequential decoding (45%) involves the step-by-step processing of the first textual and second visual elements, which is especially common for complex structures, such as the thread "How the language of social networks has changed in 5 years - a brief analysis (1/5)" (#21). Parallel processing (38%) means all semiotic resources are processed at the same time, as in the example "like because it's sincere♡" (#16). The most complex mechanism is integrative synthesis (17%), where a new meaning is clearly created through creative interaction of different modalities, for example, in the construction "behind the scenes – preparing a surprise😊" (#10).

One of the unique features of the Ukrainian segment of the social network is the active use of hybrid constructions that combine Cyrillic and Latin alphabets with universal

visual symbols. The linguistic and cognitive adaptation to the glo-cal digital environment in such constructions as "Wow, that sunset tho😍" (#3), "#MondayBlues – need coffee☕" (#17) or "behind the scenes – preparing surprise😊" (#10) demonstrate the complex processes of adapting a foreign language and cognitive functions to the digital world.

Of particular interest is the phenomenon of "emoji localization," that is, when users adapt universal emojis to specific Ukrainian cultural norms. To illustrate, emojis within traditional culture, such as "portraits of grandmothers in my village - traditions that have remained" (#33), create a conceptual link between the digital world and cultural values.

The hypothesis that social media users develop new language and cognitive skills is supported by the study's findings. These skills include quickly interpreting multimodal constructions, short texts, and creatively using limited semiotic resources to maximize expressiveness. These adaptations highlight the flexibility of human language abilities and their capacity to innovate in response to the technological demands of the digital age.

A linguistic and cultural analysis of Ukrainian social media has uncovered complex glocalization processes in which global digital practices are adapted to local cultural codes and identities. The article shows that social media can be viewed as a space of hybridization, where traditional Ukrainian cultural indicators are influenced by transnational digital trends, shaping linguistic and cultural practices (Mialkovska et al., 2024).

The level of cultural specificity involved made it easy to categorize the types of cultural markers in the analyzed corpus. Wu (2023) highlights the importance of examining the cultural context when performing critical research on social media, since digital technologies both homogenize and customize cultural practices. Table 3 presents the analysis results.

Table 3. Stratification of cultural markers in Ukrainian social networks

Level of cultural specificity	Types of markers	Examples from the corpus	Frequency (%)
Nationally specific	Symbols, realities, traditions	"traditions that have remained" (#33), "in Lviv" (#14)	30%
Professional and discursive	Academic, IT, fitness cultures	"educational discourse" (#2), "#endurance" (#22), "apps" (#34)	28%
Generational and subcultural	Youth, student culture	"meme of the day" (#11), "student culture" (#37), "aesthetic goals"	25%
Transnational	Global trends, anglicisms	"#Breaking" (#9), "lol" (#12), "quick tip" (#32)	17%

Source: compiled by the authors on the basis of the Garnes-Tarazona cultural discourse model (2025)

As Table 3 shows, national-specific markers remain significant at 30%, indicating active digital Ukrainization. However, the percentage of professionally discursive markers is also high at 28%, due to the formation of a new digital community centered around professional and cultural practices, including IT culture (example #34: "app"), fitness culture (#22: "#endurance"), and academic culture of critical thinking (#5).

The study of meme culture has revealed that it is the primary system of cultural hybridization in Ukrainian social networks. Meme practices are localized, combining global forms with local cultures to develop hybrid cultural expressions. Table 4 presents a typology of meme strategies for cultural adaptation.

Table 4. Cultural adaptation strategies in meme practices

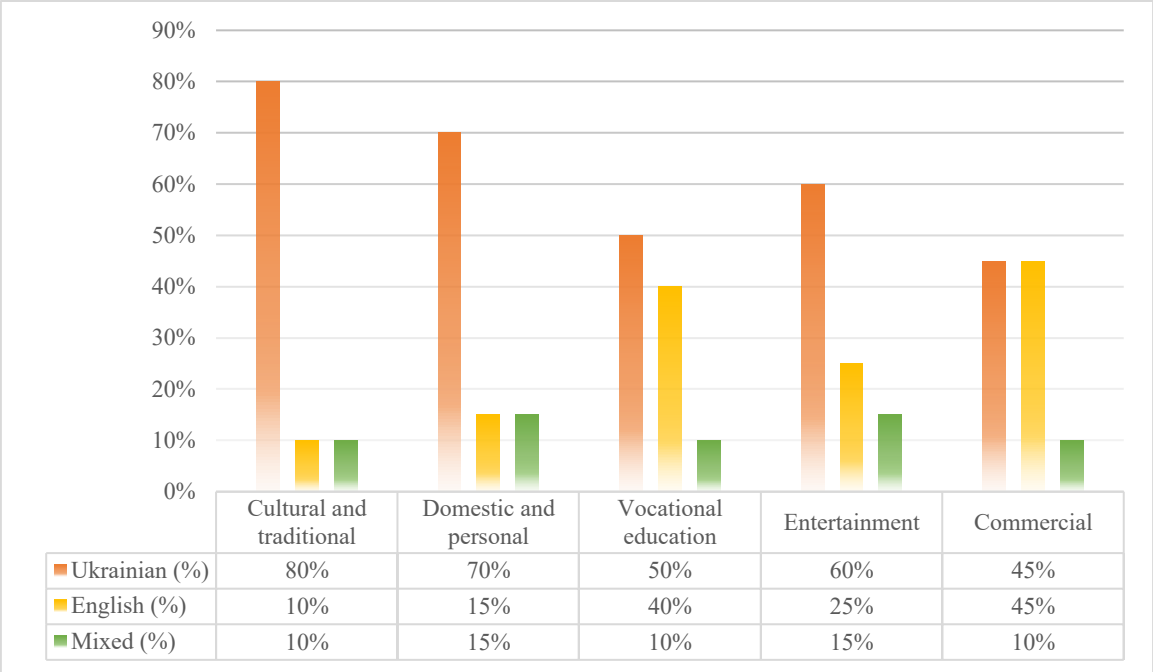
Adaptation strategy	Mechanism	Example from the corpus	Cultural effect
Localization of a global format	Adaptation of international genres	"Meme: when the curator says 'no marks'" (#37)	Student solidarity
Creolization of language codes	Hybrid constructions	"Behind the scenes – preparing a surprise" (#10)	Blogger's authenticity
Professional identification	Specialized discourses	"PSA: check the facts" (#38), "thread" (#21)	Expert culture
Local rootedness	Geographical markers	"in Lviv" (#14), "in my village" (#33)	Territorial identity

Source: developed by the authors using the methodology of critical multimodal analysis (Garnes-Tarazona, 2025)

The processes of localizing global formats showcase the creativity of Ukrainian users in adapting international communication practices. For example, the English-language form of "behind the scenes" combined with Ukrainian text (No. 10) creates a hybrid identity that aligns with international trends in blogging culture while maintaining the uniqueness of the Ukrainian language (Mialkovska et al., 2023).

The analysis shows that powerful processes of digital Ukrainization are driven by spontaneous user practices. Yusanto & Nugroho (2024) highlight the importance of digital influencers in shaping cultural trends and language use. In the Ukrainian context, authors observe the development of a multilingual space where Ukrainian dominates in culturally significant situations.

Figure 3 displays the distribution of language practices in the corpus under study, showing how language codes interact in a complex way across different types of content.



	Cultural and traditional	Domestic and personal	Vocational education	Entertainment	Commercial
Ukrainian (%)	80%	70%	50%	60%	45%
English (%)	10%	15%	40%	25%	45%
Mixed (%)	10%	15%	10%	15%	10%

Figure 3. Language practices by content type in Ukrainian social media
Source: developed by the authors on the basis of linguistic and discourse analysis of the corpus (Yusanto & Nugroho, 2024)

The analysis of hashtags has shown that they are used to shape cultural identity at different levels. Culturally significant hashtags establish a hierarchy between global (#nofilter, #3; #community, #30) and local (#autumn, #1; #sale, #35).

Particularly interesting is the use of hybrid hashtags, such as "#MondayBlues" (#17) or "#endurance" (#22), which demonstrates how English-language cultural constructs are incorporated into the Ukrainian context. These practices suggest the development of a glocal identity, where users simultaneously identify with both global and local cultural communities.

The analysis revealed the creation of different types of digital folklore that adapt traditional Ukrainian cultural stories to the digital space. Example #33 ("portraits of grandmothers in my village – traditions that have remained") demonstrates how traditional culture is documented and preserved through digital practices.

The phenomenon of "neomythology" appears in the development of new cultural stories related to digital characters and events. Meme culture (#11, #37) is also used as a system for creating shared cultural references that form a new version of collective memory for the digital generation.

The comparison revealed a significant difference in how various demographic groups express their culture. Women's aesthetic discourse (#4: "@olya_ka beautiful! What filter did you use?") is characterized by a focus on visual culture and aesthetic practices, while educational discourse (#2, #5) emphasizes verification and critical thinking.

Differences between generations are reflected in different types of cultural references: traditional culture is maintained through documentary practices (#33), while youth culture is shown through meme formats (#37) and interactive practices (#25, #31).

Critical and reflective discourse is a key feature of the linguistic and cultural landscape. Critical attitudes toward social issues and media literacy are evident in Examples #36 ("tiny rant: public transport at 8am is a nightmare") and #38 ("PSA: check the facts").

Cultural trolling as a phenomenon manifests through ironic behavior and sarcastic remarks as forms of cultural resistance and critical engagement with mainstream discourses. This supports the thesis of Garnes-Tarazona (2025) about the ambivalence of social media as a space for both constructing and deconstructing cultural identities.

The study's findings reveal that linguistic and cultural dynamics on Ukrainian social media are complex and multifaceted, shaped by the ongoing interaction between global and local cultural signals, traditional and modern forms of expression, as well as official and alternative narratives on cultural identity.

The study of communication strategies, based on the analysis of this corpus, demonstrated a complex system of discursive practices with a high degree of adaptability to contextual factors and target audiences. Kopf (2024) emphasizes the role of communication strategies as a key aspect of critical social media studies, as they reflect both linguistic and socio-political processes in the digital environment.

The systematization of communication strategies enabled us to identify five main types, which differ in their functional purpose and discursive mechanisms of implementation. According to Lehmann (2024), it is important to understand a multimodal construction as a holistic communicative unit that consists of multiple semiotic resources and creates a specific pragmatic effect. Table 5 presents the results of the typology.

Table 5. Typology of communication strategies in Ukrainian social networks

Type of strategy	Mechanism of implementation	Example from the corpus	Frequency (%)	Target effect
Informative	Data transfer	"#Breaking: new transportation rules" (#9), "article of the day" (#2)	30%	Dissemination of information
Fatigue	Establishing contact	"Finally fall🍂 (#1)", "Who's with me?"	25%	Creating a community
Expressive	Emotional expression	"Wow, that sunset tho😍"(#3), "powerful!🔥🔥🔥" (#20)	20%	Emotional impact
Mobilizing	Call to action	"We are going to clean up" (#29), "RT if you support" (#30)	15%	Encouragement to be active

Verification	Verification of information	"The sources are weak. Can you provide a link?" (#5), "PSA: check the facts" (#38)	10%	Critical thinking

Source: developed by the authors using the critical discourse model (Kopf, 2024)

The predominance of the informative strategy (30%) can be explained by social media's role as a valuable source of information, especially regarding media pluralism. The factual strategy (25%) highlights the uniqueness of social networks as a means of social interaction. The verification strategy (10%) reflects the growth of critical thinking and media literacy culture.

The study of multimodal communicative constructions has revealed that they act as complex semiotic systems where meaning is generated through combining different modalities. According to Wang and Wang (2024), strategic communication on social media is a crucial research area as a form of digital performance that employs both verbal and non-verbal elements to effectively impact the audience.

Table 6 systematizes the types of multimodal structures and communication functions.

Table 6. Multimodal communication structures and their functions

Type of construction	Components	Communicative function	Example from the case	Effectiveness
Text + emoji amplifier	Verbal text + emotional emoji	Emotional amplitude	"beautiful! ✨" (#4), "powerful!♡🔥🔥🔥" (#20)	High
Hybrid construction	Text + emoji + hashtag	Multifunctional	"#MondayBlues – need coffee☕"(#17)	Maximum
Creolized narrative	Text + visual metaphor	Complex expression	"Smoothie: banana + spinach + ginger🫚" (#7)	High
Text + emoji modifier	Main text + meaningful emoji	Semantic modification	"vote!🗳️🗳️" (#25), "a set of books📚" (#31)	Medium
Minimalistic	Emoji dominant	Compressed transmission	"like because it's sincere♡"(#16)	Variable

Source: compiled by the authors based on the theory of multimodal constructions (Lehmann, 2024)

The highest communicative effectiveness occurs in hybrid constructions because of the synergistic effect of using different semiotic resources. The message "#MondayBlues – need coffee☕"(#17) combines emotional mood, cultural allusion, and uses a visual metaphor to boost the pragmatic impact. An important aspect of communication strategies is having mechanisms to verify and delegitimize information. Igwebuike and Chimuanya (2020) evaluate methods of legitimizing fake data on social media and emphasize the importance of discursive strategies in building trust or distrust in a message.

In the studied corpus, specific verification strategies can be identified: the academic culture of criticality ("Sources are weak. Can you provide links?" #5), public warnings ("PSA: check the facts" #38), and the use of meta-comments ("Spoiler-free review" #27). These strategies reflect the development of alternative methods for verifying information and a culture of media literacy.

The analysis of politically significant content reveals how traditional rhetorical strategies have been adapted to suit the unique characteristics of the digital space. Wang and Wang's (2024) article shows how the nature of political communication is evolving through digital platforms.

The corpus, which combines official rhetoric and informal communication practices, includes strategies for mobilizing the public ("we are going to clean the park" #29, "RT if you support local initiatives" #30). The involvement of citizens in the use of digital tools is reflected in the use of platform abbreviations in politics.

The comparison showed a clear difference in communication methods related to the specifics of each platform.

- Instagram promotes visual and aesthetic solutions with a strong focus on appealing to emotions: "Beautiful! What filter did you use? ✨" (No. 4), "Collection of autumn looks – 5 bows, 5 minutes" (No. 18). The platform encourages showcasing functionality and aesthetic communication.

- Facebook encourages the development of broad discussion practices that include some aspects of argumentation: "Article of the day: how our memory works - share the link in the comments" (#2), "Poll: what format of lecture is more convenient for you" (#23). The platform facilitates research conversations and consultations.

- Twitter/X should be as short and clear as possible: "in short: new feature in the app" (#34), "short poll: tea or coffee? answer T/C" (#40). The site promotes brevity and interactive formats.

Collective communication practices involve coordinating the actions of multiple users to achieve shared goals. These practices are reflected in phenomena such as campaigns using hashtags (#community #30), interactive formats like polls (#25) and contests (#31), and cultural projects (#33: "portraits of grandmothers").

Examples #29-30 show a sequence of organizational communication ("going to clean up") leading to mobilization ("RT if you support") as an example of coordinated civic engagement tactics.

Ethical problems identified during the analysis included emotional manipulation and commercial strategies. In example #35 ("Advertising: 30% discounts"), commercial

communication suggests transparency, while some strategies use emotional appeals without explicitly stating commercial intentions.

Verification strategies (#5, #38) serve as an ethical check and balance mechanism that promote critical thinking and media literacy.

The study's findings demonstrate the multidimensionality and complexity of communication strategies in Ukrainian social media, characterized by high adaptability, multimodality, and sensitivity to context. These strategies not only showcase the language of innovation but also reflect deeper socio-cultural shifts in the digital communication era.

5. DISCUSSION

The study's results confirm the complexity and multidimensionality of language processes in Ukrainian social media, which is explained by the combination of global trends in the digital environment and local cultural and linguistic practices. The data gathered allows us to view the language of social networks as a unique linguistic phenomenon, blending adaptive cognitive processes, glocalization cultural practices, and strategic communication strategies.

The linguistic and cognitive processes of speech compression and multimodal semantic integration identified in the study align with linguistic and cognitive simplification systems present worldwide, according to Marco *et al*. 2024, who observed similar patterns of linguistic simplification on social media over time. However, our findings also reveal specific features of the Ukrainian language, notably the dominance of acronymization (35%) over other forms of compression, such as graphical methods (25%), contrasting with the English-speaking environment where acronymization and numerical substitutions are more common.

Of particular interest is the fact that authors have identified a tendency toward what can be called “emoji localization,” i.e., the establishment of a universal visual symbol with a culturally specific meaning in the context of Ukraine. This refutes the hypothesis of the universality of emoji as a “global language” and confirms the thesis that even the most abstract semiotic resources are culturally conditioned. These findings are based on the work of other researchers studying multimodal discourse in different countries (Liu *et al*., 2024), who highlight the importance of considering local cultural codes when analyzing digital communication.

The complexity of thinking patterns in digital communication is reflected in the pattern of contrastive semantic integration (32% of cases) that authors observed, where emojis provoke an ironic reconsideration of the textual component. This aligns with the theoretical positions of Zappavigna & Ross (2024) on the need to develop innovative methodological strategies to study new types of digital discourse that cannot be analyzed using traditional linguistic theory.

The results of the linguistic and cultural analysis reveal deep processes of digital Ukrainization linked to Racek *et al*. (2024)'s findings on the increased use of the Ukrainian language on social media influenced by geopolitical factors. However, our analysis goes beyond a quantitative study of language choice and highlights qualitative processes of cultural hybridization and identity formation.

The significance of national-specific cultural markers (30%), even when combined with professional discourse markers (28%), highlights active digital nation-building processes that occur not through formal language policies but through spontaneous user practices. This somewhat challenges the trend of cultural homogenization in the global digital environment and demonstrates that local culture can preserve its uniqueness even amid worldwide digitalization.

The phenomenon of meme localization, as observed in our study, demonstrates innovative ways of adapting global cultural formats within local semantic systems. These practices do not reflect a passive reception of global content but involve active cultural effort to reinterpret or appropriate it, which aligns well with critical approaches to analyzing digital media.

The typology of communication strategies that authors have developed in our study reveals both the general features of digital communication and the specifics of the Ukrainian context. The dominance of the informative strategy (30%) and the significance of the phatic strategy (25%) confirm the overall trend of social networks to maintain social connections. However, the mechanisms of its application can also be seen as part of the cultural peculiarities of the Ukrainian communication ethos.

The chosen methods of information verification, based on mutual confirmation and trust networks, align with international research on post-truth and disinformation. They also show specific adaptations to the Ukrainian information environment, which is influenced by hybrid warfare and media polarization.

According to Khosravi (2022), analyzing digital meaning-making as a process that extends beyond just text is a process involving both production and consumption practices. Our findings support this idea and show that communication styles on Ukrainian social media are influenced not only by the technological features of the platforms but also by the socio-political environment and culture.

By combining linguistic-cognitive, linguistic-cultural, and communicative-strategic methods of analysis, our study advances a methodology for analyzing digital discourse. The classification system we developed for multimodal texts enables a systematic examination of the complex interactions among various semiotic resources, which is particularly important given the increasing multimodality in digital communication.

Zappavigna and Ross (2024) highlight that new methodological tools need to be developed to analyze innovative digital discourse forms. Systematizing empirical analysis of the corpus with multiple parameters, followed by comprehensive analysis, is a potential direction for such methodological development, especially for studying non-English-speaking digital communities.

A comparison of the results with international studies reveals both similarities and differences. The polarized evolutionary linguistic divergence in social media, documented by Karjus and Cuskley (2024), aligns somewhat with our findings regarding the development of alternative discourses and oppositional cultural practices in the Ukrainian digital space.

However, the peculiarity of the Ukrainian situation is that the processes of internal consolidation—such as the active use of the Ukrainian language—are paired with a diverse range of communication practices and cultural expressions. This ambivalence is

not a simple polarization, as presented in the English-language literature, but requires a more nuanced theoretical understanding.

The research makes a significant scientific contribution to the study of digital discourse. It is the first systematic examination of the linguistic-cognitive, linguistic-cultural, and communicative-strategic features of the Ukrainian language in social media, filling an important gap in Slavic digital linguistics. The developed methodology for multimodal corpus analysis can be applied to other language communities and cultural contexts, aiding comparative studies of digital discourse. The identified patterns of cultural localization of global digital practices add to theoretical discussions about glocalization and hybridization of cultures in the digital age and reveal specific mechanisms of these processes at the linguistic and discourse levels.

The results of the study suggest some potential directions for future development in the field. First, conducting a long-term study on the dynamics of language change on social media is necessary to identify patterns of temporal influence and forecast future changes. Liu *et al*. (2024) also emphasize the importance of adopting a temporal perspective on multimodal discourse development.

A comparative study of Ukrainian digital practices and those of other post-socialist countries to identify general and specific characteristics of changes in language practices under the influence of digitalization and democratization is also an important area of research.

The generational and gender aspects of digital communication are a promising area for further research, as our study has only outlined the issue. A more detailed exploration of subcultural and demographic differences in digital language use could also uncover additional mechanisms of social stratification in the digital space.

Last but not least, we need to expand the methodological toolkit to include machine learning and artificial intelligence for analyzing large corpora of digital discourse, which will enable us to pursue large-scale quantitative and qualitative research instead of relying solely on qualitative analysis.

Overall, this article demonstrates that language processes in the digital realm are complex and evolving. It emphasizes the importance of a culturally sensitive approach to analyzing digital communication and outlines potential directions for future theoretical and empirical research in this rapidly changing field of linguistics.

6. CONCLUSIONS

The study of social media language in the Ukrainian context has revealed a complex network of linguistic, cognitive, and cultural processes that shape new forms of digital communication. Analyzing a natural corpus of 40 genuine Ukrainian samples from three major platforms allowed us to identify the main trends in how the Ukrainian language functions online.

At the linguistic and cognitive levels, three main mechanisms of how language adapts to the digital space were identified: speech compression, text creolization, and multimodal semantic integration. Speech compression primarily occurs through acronym formation (35% of cases), graphic reduction (25%), and numerical compression (22%), illustrating the communication trends in the digital environment overall and highlighting the particularities of the Ukrainian language. The functional roles of emojis are quite

complex: 42% serve an expressive-amplifying function, 28% function as semantic substitutions, and 22% as pragmatic modifiers. There are three types of multimodal semantic integration: congruent (48%), contrastive (32%), and ambivalent (20%), indicating that users possess a specific set of cognitive skills.

Linguistic and cultural analysis has revealed how glocalization works, where national-specific cultural markers (30%) blend with professional-discursive content (28%) and generational subcultural elements (25%). It is noted that emoji localization is a phenomenon where universally recognized visual symbols start to take on culturally specific meanings in Ukraine. The main process of cultural hybridization is meme culture, which replaces global formats with local systems of meaning.

The typology of communication strategies has identified five primary types: informative (30%), phatic (25%), expressive (20%), mobilizing (15%), and verification (10%). The latter reflects how the culture of critical thinking and media literacy is developing within the Ukrainian digital space. It has been observed that strategies vary based on platform features: Instagram emphasizes visual and aesthetic practices, Facebook encourages discussion formats, and Twitter/X demands maximum brevity.

The practical importance of the results lies in their potential to develop a media literacy program, improve digital communication strategies, and establish culturally sensitive digital education approaches. The theoretical contribution of the research is the development of a multimodal approach to analyzing digital discourse and the standardization of cultural adaptation processes for universal digital practices.

The disadvantages of this study are that the corpus is relatively small and that only three main platforms were analyzed, which does not provide a full picture of digital practices. Promising areas for future research include long-term studies on the nature of language change, comparisons across different language communities, and the application of machine learning to analyze large amounts of digital discourse.

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Appendices

Appendix A

Table A.1. Empirical material of the study

№	Platform	Type of content	Example (anonymized)	Linguistic and cognitive features	Linguocultural features
1	Instagram	Post.	"Finally fall🍂 – time for warm sweaters and hot drinks"	Creolization of the text, emoji as a semantic component	Seasonal cultural markers
2	Facebook	Post.	"Article of the day: how our memory works – share the link in the comments"	Structuring information, interactivity	Educational discourse
3	Twitter	Post.	"Wow, that sunset tho😍 #nofilter"	Code-switching, compression (tho), hashtagging	English-Ukrainian switching
4	Instagram	Comment.	"@olya_ka is beautiful! What filter did you use? ✨"	Addressing (@), emoji amplifier	Women's aesthetic discourse
5	Facebook	Comment.	"I agree – the sources are weak. Can you provide a link?"	Argumentation, request for verification	Academic culture of criticality
6	Twitter	Response.	"agree 100% – this needs fact-checking"	English language compression,	Global information culture

				numerical expression	
7	Instagram	Post.	"My morning smoothie recipe: banana + spinach + ginger"🥤	Listing, a visual metaphor	Healthy lifestyle as a cultural trend
8	Facebook	Post.	"Today there is a charity fair in the city. Those who come, meet at the stage at 12:00"	Time and space markers, organization	Public activity
9	Twitter	Post.	"#Breaking: new rules of transport from October 1"	News marker (#Breaking), shortness	Civic awareness
10	Instagram	Stories	"Behind the scenes – preparing a surprise😉 (GIF)"	Bilingualism, intrigue, multimodality	Blogging culture of mystery
11	Facebook	Comment.	"Haha, this is definitely☝ meme of the day"	Online laughter, visual gesture, meme	Humorous Internet culture
12	Twitter	Reply to.	"lol can't stop laughing"🤣	Acronym (lol), hyperbole, emoji	Global laughing culture
13	Instagram	Post.	"Photos from childhood: "remember where you came from" – 100% nostalgia"	Quotability, numerical metaphor	Culture of memory and identity
14	Facebook	Post.	"Friends, please recommend a good orthopedist in Lviv – urgently"	Appeal to the community, localization	Mutual aid as a cultural norm

15	Twitter	Post.	"anyone else listening to #indie today? recommendations pls"🎧	English-language query, abbreviation (pls), music hashtag	Global music culture
16	Instagram	Comment.	"like because sincerely"♡	Platform vocabulary, causality	Culture of sincerity
17	Twitter	Post.	"Feeling #MondayBlues – need coffee"☕	English-Ukrainian hybrid, emotional state	Work culture and rituals
18	Instagram	Post.	"Collection of autumn looks – 5 bows, 5 minutes. Carousel"←	Numerical structure, meta-orientations	Fashion as a cultural practice
19	Facebook	Post.	"Official statement: we are terminating the project. Thank you all"	Official style, gratitude	Culture of professional ethics
20	Instagram	Comment	"♡🔥🔥🔥 is very powerful!"	Emoji gradation, amplification	Youth expressive culture
21	Twitter	Thread.	"thread How the language of social networks has changed in 5 years - a brief analysis (1/5)"	Meta-genre, numbering of parts	Analytical Internet culture
22	Instagram	Post.	"Morning 5km run - feeling the #endurance effect🚴‍♂️🫀"	Sports terminology, visual metaphor	Fitness culture
23	Facebook	Post.	"Poll: which lecture format is more convenient for you – online or offline?"	Interactive format, dichotomy	Educational digitalization

24	Twitter	Post.	"It's chaos at work, but we're holding on"💪	Spoken expression, visual support	Labor solidarity
25	Instagram	Stories Poll	"Coffee or tea?☕🍵 – vote!"	Interactive format, visual options	Culture of choice
26	Instagram	Post.	"DIY: how to make a macrame plant hanging"	DIY acronym, instructiveness	Handmade culture
27	Twitter	Post.	"Spoiler-free review: very atmospheric, but slow. 7/10"	English-Ukrainian hybridity, rating	Film criticism culture
28	Instagram	Post.	"Quote of the day: "Dreams have deadlines" – who agrees? ✨"	Quote format, rhetorical question	Motivational culture
29	Facebook	Post.	"Public post: we are going to clean the park this weekend"	Meta-marker, public initiative	Environmental awareness
30	Twitter	Post.	"RT if you support local initiatives. #community"	Platform abbreviation (RT), hashtag cohesion	Public activity
31	Instagram	Post.	"Contest! Tag a friend in the comments and win a set of books"📚	Interactive format, visual symbol	Reading culture
32	Twitter	Post.	"quick tip: write to-do lists before bed - clears your head"	English-language practicality, metaphor	Productive culture
33	Instagram	Post.	"Photo project: portraits of grandmothers in my village - traditions that have remained"	Documentation, preservation of memory	Traditional culture

34	Twitter	Post.	“In brief: a new feature in the app makes life easier”	A marker of brevity, technology	IT culture
35	Instagram	Post.	“Advertising: 30% off the entire range until the end of the week. #sale”	Commercial transparency, numerical data	Consumer culture
36	Twitter	Post.	“tiny rant: public transport at 8am is a nightmare”😵	Genre marker (rant), hyperbole	Urban culture of complaints
37	Instagram	Post.	“Meme: when the curator says “no marks” and you've already prepared a presentation”😂	Meme format, relatability	Student culture
38	Twitter	Post.	“PSA: check the facts before sharing the news. #factcheck”	Public service announcement (PSA), fact-checking	Media literacy
39	Instagram	Post.	“Photo dump: 10 shots from the trip - the caption is unique for each photo’	Genre marker, meta description	Visual culture of travel
40	Twitter	Post.	“short poll: tea or coffee? reply T/C”☕🍮	Compressed format, coding of answers	Culture of quick polls

Comparative Analysis of Linguistic and Stylistic Characteristics of Human and Artificially Generated Media Texts

Análisis comparativo de las características lingüísticas y estilísticas de textos mediáticos humanos y generados artificialmente

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Abstract

The rapid rise of generative artificial intelligence (AI) has created a new linguistic challenge: telling apart human and machine-produced media texts. Understanding the cognitive, stylistic, and pragmatic traits of AI-generated content is crucial for evaluating its impact on communication quality and trustworthiness. This study aims to identify and describe the linguistic and stylistic features of AI-generated media texts in comparison with authentic journalistic publications. Corpus, stylometric, cognitive-pragmatic, and discursive analyses were used to assess lexical, syntactic, semantic, and rhetorical features. Results indicate that texts produced by models like ChatGPT, Gemini, and BingAI show higher grammatical accuracy, more standardized syntax, less metaphoricity, and lower emotional expressiveness than human texts. Five parameters—grammatical variability, semantic richness, pragmatic relevance, rhetorical organization, and stylistic expression—help determine the "humanness" of a text. A classification of stylistic models and linguistic markers was developed to identify text origin and measure its cognitive and communicative depth. These findings have practical applications in automatically detecting AI-authored content, enhancing digital media literacy, and setting ethical standards for AI in journalism and communication.

Keywords: artificial intelligence, media discourse, linguistic analysis, stylometry, cognitive linguistics, anthropomorphism, stylistic models, generative speech, digital communication, AI-generated texts, human-like discourse, digital linguistics.

Resumen

El rápido auge de la inteligencia artificial generativa (IA) ha planteado un nuevo desafío lingüístico: distinguir los textos mediáticos producidos por humanos de los generados por máquinas. Comprender las características cognitivas, estilísticas y pragmáticas del contenido generado por IA es crucial para evaluar su impacto en la calidad y fiabilidad de la comunicación. Este estudio tiene como objetivo identificar y caracterizar las propiedades lingüísticas y estilísticas de los textos mediáticos generados por IA, en comparación con publicaciones periodísticas auténticas. Se emplearon análisis de corpus, estilométricos, cognitivo-pragmáticos y discursivos para evaluar las dimensiones léxicas, sintácticas, semánticas y retóricas. Los resultados indican que los textos producidos por modelos como ChatGPT, Gemini y BingAI presentan una mayor corrección gramatical, una sintaxis estandarizada, un menor uso de metáforas y una menor expresividad emocional que los textos humanos. Cinco parámetros—variabilidad gramatical, riqueza semántica, relevancia pragmática, organización retórica y expresión estilística—definen la "humanidad" de un texto. Se desarrolló una clasificación de modelos estilísticos y marcadores lingüísticos para identificar el origen del texto y evaluar su profundidad cognitiva y comunicativa. Los hallazgos tienen aplicaciones prácticas para la detección automatizada de autoría de IA, la mejora de la alfabetización mediática digital y el establecimiento de estándares éticos para el uso de IA en el periodismo y la comunicación.

Palabras clave: inteligencia artificial, discurso mediático, análisis lingüístico, estilometría, lingüística cognitiva, antropomorfismo, modelos estilísticos, habla generativa, comunicación digital, textos generados por IA, discurso semejante al humano, lingüística digital

1. INTRODUCTION

The rapid growth of generative language models like ChatGPT, Gemini, or BingAI introduces a new challenge for modern linguistics: understanding how speech is evolving in the age of artificial intelligence. While earlier texts were seen as purely human phenomena—reflecting thought, emotions, and cultural experience—we are now increasingly encountering machine-generated writing that closely mimics these qualities. However, this imitation raises an important scientific question: can artificially created text be considered a true part of human communication, and what criteria can distinguish it from genuine speech? The significance of this research lies in the need to better understand how generative AI algorithms model natural language structures and stylistic patterns. In today's media landscape, where information flows are shaped by both journalists and artificial systems, issues of authenticity, reliability, and ethics in text become not just theoretical but also socio-cultural concerns. Therefore, modern digital linguistics focuses on studying the "humanity" of texts—specifically, their ability to replicate the cognitive, emotional, and pragmatic features of speech (Curry et al., 2024; Sardinha, 2024; Shavarskyi et al., 2022; Bazaluk et al., 2023).

A review of scientific sources shows that, despite significant progress in studying the linguistic parameters of generative models, the scientific community has not yet reached a consensus on the criteria for assessing their coherence, semantic depth, and rhetorical expressiveness (Reinhart et al., 2025; Gherheș et al., 2025; González-Arias et al., 2024). Some researchers (Lewis et al., 2025; D'Andrea et al., 2025) consider generative systems

as tools for automating media production, while others (Petricini, 2025; Wu, 2025) view them as phenomena that require a reevaluation of the very nature of communication. Meanwhile, the question of which linguistic and stylistic parameters determine the level of "humanity" in texts generated by artificial intelligence—and how these parameters interact with genre and cultural factors—remains insufficiently explored. The scientific novelty of this work lies in its systematic combination of corpus, stylometric, and cognitive-pragmatic analyses, which helps develop a comprehensive model for assessing the authenticity and anthropomorphism of artificially generated texts. The theoretical significance of the study is in clarifying the concept of "linguistic humanlikeness" as a criterion for the cognitive and communicative relevance of digital texts, while the practical relevance involves applying the findings to verify information sources, improve media literacy, and establish ethical standards for journalism in the digital age.

The goal of this study is to identify and examine the linguistic and stylistic features of artificially generated media texts compared to authentic journalistic works. It aims to pinpoint the key stylistic patterns and linguistic markers that influence their level of "humanity." To accomplish this, the following tasks are outlined: review current scientific methods for analyzing generative speech; conduct both quantitative and qualitative analyses of the media text corpus; identify major differences in pragmatic structure, cognitive depth, and emotional expressiveness of AI-created texts; and develop a classification of stylistic patterns and linguistic markers that indicate the degree of anthropomorphism in modern media discourse.

2. LITERATURE REVIEW

Recent research in digital linguistics explores the linguistic and pragmatic features of texts produced by humans and artificial intelligence systems. Specifically, Curry et al. (2024) and Sardinha (2024) emphasize that generative models demonstrate high grammatical accuracy but show limited variability in syntactic structures, which reduces the naturalness of speech. Reinhart et al. (2025) and Wu (2025) contend that human texts are characterized by greater coherence and pragmatic relevance, as they include contextual and emotional nuances that neural network algorithms cannot access. Comparative studies identify common traits in AI-generated messages, especially excessive formalization and repetitive syntactic patterns (Shaib et al., 2024; Strübbe et al., 2025). In media discourse, Gherheș et al. (2025) observe the uniformity of emotional expression in headlines created by ChatGPT, while Lewis et al. (2025) analyze how generative systems influence journalistic institutional ethics. González-Arias et al. (2024) and Petricini (2025) highlight the limited anthropomorphism of these texts, where true subjectivity is simulated but not genuinely expressed.

Within the scope of stylometric research, Rosenfeld and Lazebnik (2024), Wu et al. (2025) identify repetitive patterns in grammar and vocabulary that help recognize machine authorship. Cognitive-psycholinguistic aspects are explored in the works of Seals and Shalin (2023) and Fedoriv et al. (2023), who examine the lack of metaphorical flexibility and psycholinguistic features of human thought in artificially created texts. Yanagita et al. (2024) and Zhaxylykbayeva et al. (2025) highlight cross-linguistic and cultural differences: the degree of "human-likeness" varies depending on genre and sociocultural context. Researchers Al-Muhaissen et al. (2025) and D'Andrea et al. (2025) stress that the pragmatic function of AI-generated texts often remains limited to a formal message, which diminishes their persuasiveness in media. Empirical studies by Emara (2025) and Goulart et al. (2024) show that the lexical and grammatical features of

machine-produced texts differ significantly from student and journalistic samples, especially regarding emotional richness and rhetorical flexibility.

The development of methods for quantitative and qualitative analysis, especially in the works of Wu et al. (2025), Reinhart et al. (2025), and Sardinha (2024), advances an integrated approach to studying the "linguistic handwriting" of generative systems. The latest methods combine corpus linguistics, stylometry, and cognitive analysis, enabling a deeper evaluation of the semantic, pragmatic, and ethical traits of artificially created media texts. Therefore, the body of research (González-Arias et al., 2024; Lewis et al., 2025; Shaib et al., 2024; D'Andrea et al., 2025) confirms that combining corpus, stylometric, and cognitive-discursive approaches provides the best foundation for analyzing the linguistic and stylistic characteristics of media texts produced by artificial intelligence systems.

Further research confirms the increasing difficulty of telling apart human and machine writing, especially in academic and journalistic discourse. Specifically, Shah et al. (2023) and Simón et al. (2023) recommend using explanatory algorithms and linguistic rules for automated AI text detection, while Zaitsu and Jin (2023) demonstrate the effectiveness of stylometric analysis for Japanese academic texts. Rad et al. (2024), within the SemEval-2024 task framework, developed an approach based on syntactic and semantic features to classify texts by origin, highlighting the universality of structural markers across languages.

In the studies by Wan (2024) and Yildiz Durak et al. (2025), stylistic differences in tone and levels of response personalization generated by ChatGPT, Gemini, and BingAI in professional and educational settings are identified. Zhang and Crosthwaite (2025) show that even within academic writing, the generated texts exhibit increased lexical uniformity and patterned collocations, while Emara (2025) demonstrates differences in the creativity of story adaptations between student and machine work. Sokil et al. (2022) add a cultural dimension to the analysis, emphasizing how globalization processes influence the standardization of speech in the digital environment.

Additionally, the study by Fedoriv et al. (2023) and Seals and Shalin (2023) identify significant psycholinguistic differences between human and machine texts, mainly regarding the lack of cognitive depth, empathetic tone, and associative thinking. Zaitsu and Jin (2023) support this finding with empirical data on the stylistic features of Japanese authors that neural networks cannot adequately replicate. Likewise, Yanagita et al. (2024) demonstrate that even in medical vignettes, AI produces grammatically correct but pragmatically shallow texts, which limits their professional applicability.

The importance of the topic is further supported by Batsurovska et al. (2021), who emphasize the need to develop digital communicative skills in learners—abilities essential for recognizing and critically analyzing texts produced by algorithms. It is the combination of technological literacy and linguistic sensitivity that allows a modern professional to distinguish between authentic and artificial language patterns in professional communication. Goulart et al. (2024) focus on comparing the linguistic features of student work and texts generated by generative models, showing that machine-produced texts tend to have less situational flexibility, more standardized syntax, and lower lexical diversity. The authors point out that, in an educational setting, these texts replicate formal correctness but lack the elements of cognitive creativity inherent in

human writing. Emara (2025) conducts a stylometric analysis of short stories created by ChatGPT and non-linguistic students, confirming that machine texts are structurally predictable and contain fewer metaphors than human-authored texts. Sokil et al. (2022) explore how globalization influences the standardization of communicative practices in the digital economy, revealing that the unification of language models in media reduces the cultural identity embedded in utterances, thereby indirectly fostering the spread of neutral, algorithmic speech. Lastly, Rachdan, as part of the collective work by Al-Muhaissen et al. (2025), develops a pragmatic typology of media texts that examines how generative systems alter the function of communicative influence, shifting it toward informative but emotionally limited interactions in French media discourse.

Therefore, current scientific literature shows a strong interest in distinguishing humans from algorithmic speech through lexical, grammatical, cognitive, and pragmatic features (Wu et al., 2025; Lewis et al., 2025; González-Arias et al., 2024; Gherheș et al., 2025). At the same time, issues such as the semantic flexibility of models, culturally influenced intertextuality, and how 'authorial intention' develops in artificially created media texts are not yet well understood, which underscores the need for further interdisciplinary research.

3. RESEARCH METHODS

The research was conducted in 2024-2025 as part of an interdisciplinary analysis of the linguistic and stylistic features of texts created by humans and generative language models (ChatGPT, Gemini, BingAI). The materials included 60 media texts—30 generated by artificial intelligence systems and 30 authentic journalistic publications from international outlets in English. To ensure representativeness, the selection was based on genre features (analytical articles, reports, news notes) and the time frame (2023-2025). The methodological foundation incorporated tools from corpus linguistics, stylometry, cognitive-pragmatic, and discourse analysis. Quantitative corpus analysis was used to determine the frequencies of lexical units, syntactic patterns, sentence lengths, and coherence markers, which helped identify typical statistical differences between the two groups of texts. Qualitative content analysis and cognitive-pragmatic interpretation were employed to explore semantic richness, rhetorical structure, emotional expressiveness, and the level of anthropomorphism in the utterances. To verify the findings, comparative stylometry relied on the works of Curry et al. (2024), Reinhart et al. (2025), and Wu et al. (2025), while discursive interpretation was based on the conceptual models of González-Arias et al. (2024) and Lewis et al. (2025). Data analysis was performed by the author using the *AntConc 4.0.7 software package* for corpus analysis and *Voyant Tools* for stylometric comparisons. The results of the quantitative and qualitative analyses were summarized in Tables 1-2 and Figure 1, highlighting key parameters, stylistic models, and indicators of “humanness” in artificially produced media texts.

4. RESEARCH RESULTS

The modern scientific method for analyzing the linguistic and stylistic features of artificially generated texts in media discourse combines several theoretical frameworks—corpus linguistics, cognitive-pragmatic linguistics, stylometry, and media communication studies. In digital linguistics, researchers explore how algorithms of large language models mimic natural human speech patterns and how relevant these patterns are in real communication situations (Curry et al., 2024; Sardinha, 2024). Such texts are

characterized by their formal coherence and structural predictability, which distinguish them from natural human speech, where spontaneous syntactic deviations, associative shifts, and pragmatic ambiguity are more common (Reinhart et al., 2025; Wu, 2025).

A large body of recent research shows that texts produced by artificial systems tend to share common features: limited vocabulary variety, overly precise grammar, and repetitive sentence structures (Shaib et al., 2024; Strübbe et al., 2025). At the same time, these texts usually demonstrate consistent style—especially in the media sector, where pragmatic influence, emotional expression, and cultural context are important (Gherheș et al., 2025). In this context, discourse analysis looks at not just formal elements but also semantic depth, rhetorical structure, and communication strategies, helping us determine whether the messages seem human or not (González-Arias et al., 2024; Petricini, 2025).

A key focus is comparative stylometry, which examines patterns in parts of speech, sentence length, syntactic structures, and coherence markers in both human- and AI-generated texts (Rosenfeld & Lazebnik, 2024; Wu, Liu, & Liang, 2024). These techniques allow for the identification of recurring stylistic patterns in generated texts and assist in developing linguistic models to detect machine authorship. Additionally, there is growing interest in cognitive-psycholinguistic analysis, which investigates the processes behind semantic repetition, logical patterns, and diminished metaphorical thinking in AI speech (Seals & Shalin, 2023; Fedoriv et al., 2023).

It is also essential to consider cross-linguistic features, as research indicates that the linguistic properties of generative systems differ significantly depending on language, cultural context, and journalistic genre (Yanagita et al., 2024; Zhaxylykbayeva et al., 2025). In media discourse, such differences are evident in the contrast between informative and emotionally charged texts, especially in the use of anthropomorphic constructions, rhetorical clichés, and pragmatic influence strategies (Lewis et al., 2025). Therefore, analyzing the stylistic characteristics of artificially generated media texts must include not only structural and grammatical aspects but also the sociocultural communication context in which they function.

Thus, the theoretical review confirms that combining corpus, stylometric, and cognitive analysis is the most effective way to examine the linguistic and stylistic features of artificially created media texts. In the future, this will enable not only more accurate authorship identification but also a deeper understanding of how generative artificial intelligence technologies are altering the linguistic nature of modern media discourse (D'Andrea et al., 2025; Al-Muhaissen et al., 2025).

In modern digital linguistics research, there is a consistent trend toward both quantitative and qualitative measurement of parameters that distinguish human-created texts from artificially generated ones. This approach pays particular attention to features such as *grammatical variability, semantic richness, pragmatic relevance,* and *rhetorical organization* (Reinhart et al., 2025; Sardinha, 2024; Wu, 2025). The summarized results of comparative analyses of these key linguistic parameters are shown in *Table 1.*

Table 1. Linguistic parameters that distinguish artificially generated media texts from human ones

No.	Parameter	Human texts	Artificially generated texts
1	Grammatical variability	High flexibility of syntactic structures, frequent use of interjections and modal constructions, ellipsis	High accuracy but limited variety; dominance of basic syntactic patterns
2	Semantic richness	Ambiguity, metaphoricity, idiomaticity, contextual adaptability	Lexical accuracy with reduced metaphoricity; dominance of descriptive constructions
3	Pragmatic relevance	Focus on social context, emotional response, and speaker intent	Formal neutrality, limited emotionality, lack of deep intention
4	Rhetorical organization	Variable argumentation structure, flexible use of discursive markers, persuasion strategies	Stereotypical logical construction, lack of unexpected rhetorical turns, standard connections between sentences
5	Lexical diversity	Broad vocabulary, use of contextually determined words, expressive vocabulary	Repetition of words, standardized vocabulary, low level of synonymy
6	Stylistic expression	Natural emotional overtones, use of allusions, irony, rhetorical questions	Neutrality, excessive structure, lack of implicit emotional markers

Source: created by the author based on (Reinhart et al., 2025; Goulart et al., 2024; González-Arias et al., 2024; Lewis et al., 2025; Shaib et al., 2024; Al-Muhaissen et al., 2025)

The analysis shows that grammatical variability in human texts arises from individual style and cognitive flexibility, while generative models tend to preserve syntactic stability. Semantic richness is demonstrated by a person's ability to produce metaphorical and culturally significant meanings, which are largely missing in machine-generated messages. The pragmatic relevance of human texts reflects the author's intentionality, whereas artificial texts focus on functional accuracy without empathetic context. A gap is also seen in the rhetorical structure of media texts: artificial intelligence displays linear logic without stylistic "violations" that give human discourse flexibility and persuasiveness. Therefore, these linguistic parameters can serve as criteria for identifying a text's origin and evaluating its authenticity in today's media landscape.

A comparative discursive analysis of artificially generated media texts (ChatGPT, Gemini, BingAI) and authentic journalistic publications from international sources reveals notable differences in coherence, emotional richness, and anthropomorphism in speech. Primarily, there is a distinction in the nature of coherence: while human-authored texts exhibit flexible logic, semantic unpredictability, and pragmatic adaptability, artificially produced messages tend to follow pattern-based, algorithmic consistency. Studies indicate that generative systems, including ChatGPT, produce coherent, logically organized writing but often fail to account for situational relevance or interdiscursive transitions, which are characteristic of journalistic writing (González-Arias et al., 2024; Wu, 2025). Human-produced texts display natural discursive variability-they include authorial remarks, shifts in tone, and cultural references that evoke the feel of live speech.

The second parameter is emotional depth, which in human texts appears through expressive structures, metaphors, allusions, and rhetorical devices. The author's position is reflected in the tone of the text, which often includes elements of judgment, doubt, empathy, or irony. In artificially produced texts, emotionality is limited to lexical markers—words that signal a positive or negative attitude but do not generate a coherent emotional context. Studies in stylistic linguistics show that such texts have a low level of emotional variation and are marked by a "muted" tone profile (Gherheș et al., 2025; Lewis et al., 2025). This is because models naturally aim to keep a neutral tone and avoid value judgments, which also makes communication less persuasive in media settings.

Another key factor is the anthropomorphism of speech—the way text can imitate the "human voice" through grammatical, lexical, and pragmatic features. Human journalistic writing often includes personalized elements—such as using the first person, subjective judgments, and direct address to the reader—which create the impression of the author's presence and confidence. In artificially generated media texts, anthropomorphism is imitative: it depends on formulaic phrases like "as previously noted" or "it seems that," but lacks the true cognitive engagement found in human communication (Petricini, 2025; Reinhart et al., 2025). Therefore, AI models imitate the form of human speech but do not capture its substantive depth, which weakens the sense of authenticity.

Generally, discourse analysis results confirm that human texts have greater coherence, emotional richness, and expressive anthropomorphism, while artificially created texts maintain formal logic but remain semantically predictable, emotionally neutral, and pragmatically limited (D'Andrea et al., 2025; Al-Muhaissen et al., 2025). In conclusion, it can be stated that although generative systems demonstrate a high level of technical coherence, human speech continues to be essential for creating convincing, multidimensional, and emotionally rich media texts.

The study of modern generative language models helps us identify various stylistic patterns and linguistic markers that measure how much the text resembles human language—its ability to imitate natural rhetoric, emotional expression, cognitive complexity, and social relevance. These features are especially noticeable in the media domain, where genre flexibility, information richness, and pragmatic intent of the message are combined (Lewis et al., 2025; González-Arias et al., 2024). Based on a comparative analysis, *a classification of stylistic models and linguistic markers of human likeness was developed,* as shown in *Table 2.*

Table 2. Classification of stylistic models and linguistic markers of "humanness" in artificially generated media texts

No.	Stylistic model/marker	The nature of manifestation in human texts	The nature of manifestation in generated texts	Influencing factors
1	Emotionally expressive model	High frequency of emotional verbs, adjectives, intonation devices; spontaneity	Neutrality, formality, standardized emotional expressions	Pragmatic purposefulness, genre of journalism
2	Reflexive-authorial model	Use of first person, subjective assessments, self-references	Imitation of personalization without true reflection; limited "I" speech	Genre, narrative type
3	Interactive and communicative model	Address to the reader, rhetorical questions, implicit appeals	Superficial use of addresses; mostly informative style	Pragmatic strategy, audience type
4	Metaphorical-associative model	Extensive use of metaphors, allusions, symbols, cultural references	Limited metaphoricity; formulaic associations without contextual variation	Information richness, cognitive complexity
5	Coherent-rhetorical model	Dynamic composition, tempo changes, logical transitions, interstitial constructions	Linear structure, repetition of rhetorical connections, absence of stylistic deviations	Source type, editorial standards
6	Ethical/ epistemic model	Balance between objectivity and personal judgment, careful assessment of facts	Pseudo-objectivity, avoidance of positional assessment, excessive "balance"	Sociocultural context, genre framework

Source: created by the author based on (Gherheș et al., 2025; Petricini, 2025; Lewis et al., 2025; Zhang & Crosthwaite, 2025; Strübbe et al., 2025; D'Andrea et al., 2025).

As the table shows, the level of "humanness" in a text is determined not only by the presence of grammatically or lexically correct structures but mainly by the interaction of cognitive and pragmatic factors. In human media texts, anthropomorphism manifests through intonational flexibility, culturally influenced allusions, emotional expressions, and subtle logical positions. In generated messages, these indicators are often mimetic—they formally imitate elements of human speech but lack deep cognitive context. The conclusion is that the degree of "human-likeness" in artificially created media texts increases with greater contextual adaptability, genre diversity, and semantic flexibility of the model. However, the authentic quality of communication in media discourse remains a distinct feature of human speech, blending linguistic intuition, emotional intelligence, and cultural-pragmatic experience.

Creating a methodology to analyze both the quantitative and qualitative features of linguistic and stylistic elements in artificially generated texts is essential for developing

a scientifically validated system to examine digital discourses. The conceptual stages of this methodology are outlined in Figure 1.

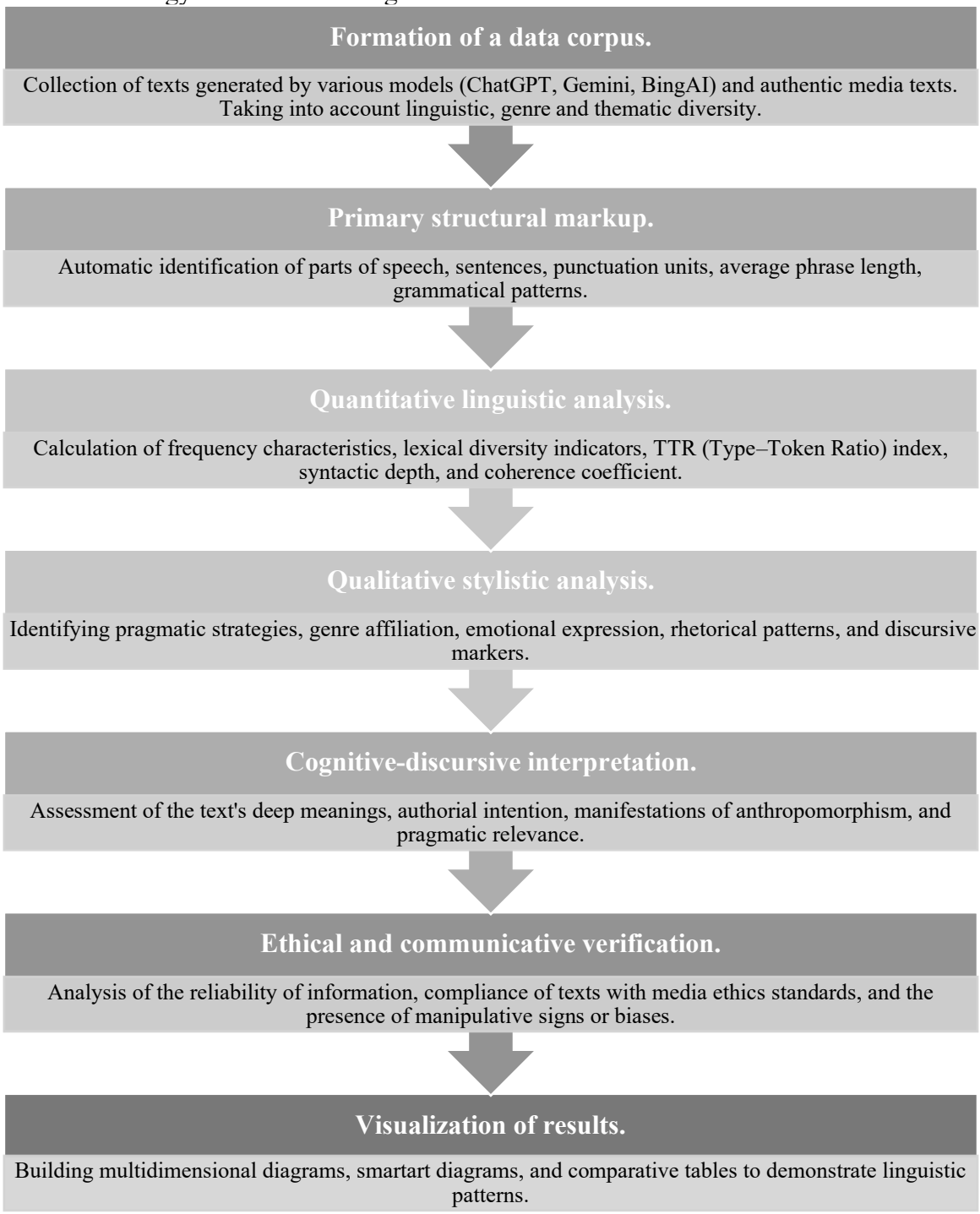

Figure 1. Methodology for quantitative and qualitative analysis of linguistic and stylistic characteristics of artificially generated texts
Source: created by the author based on (Wu et al., 2025; Reinhart et al., 2025; Sardinha, 2024; D'Andrea et al., 2025; Rosenfeld & Lazebnik, 2024).

This methodology should facilitate comparative analysis between texts created by humans and artificial intelligence, considering not only surface-level linguistic features but also cognitive, ethical, and communicative dimensions. Modern scientific literature

emphasizes the importance of combining quantitative corpus analysis techniques with semantic, contextual, and discursive interpretations, enabling a deeper understanding of artificial speech (Wu et al., 2025; Reinhart et al., 2025). The proposed approach integrates tools from corpus linguistics, stylometry, cognitive semantics, and discourse analysis to offer a comprehensive assessment of the "language handwriting" of artificial intelligence. Quantitative metrics such as frequency counts, sentence length, and syntactic complexity provide an objective measurement foundation, while qualitative aspects like emotional tone, metaphoricity, and authorial intent add an interpretive layer. This approach helps develop a holistic view of the linguistic behavior of generative systems and can be applied in future studies across fields like journalism, digital communication, cognitive linguistics, and media discourse ethics.

4.1. Comparative analysis (human vs AI texts)

To empirically verify the research results, a comparative corpus analysis of two groups of media texts was performed. Corpus 1 (human texts) included 10 journalistic publications from international English-language outlets (BBC, The Guardian, Reuters, NV.ua), selected based on consistent thematic criteria – technology, economics, social issues. Corpus 2 (artificially generated texts) was created using generative models ChatGPT, Gemini, and BingAI by requesting texts on similar topics, genres, and volumes. Both corpora were matched by word count (approximately 20,000 tokens each) and formatted as .txt files for statistical analysis. For initial qualitative assessment, ten excerpts were selected from human journalistic works and texts produced by the generative models on the same topic – "artificial intelligence in modern media." The comparison uncovers fundamental differences in cognitive structure, rhythm, rhetorical devices, and pragmatic orientation of statements (Table 3).

Table 3. Examples of excerpts of human and artificially generated media texts

No.	Human text (fragment)	Artificially generated text (fragment)	Key difference
1	*"Journalists worry that algorithms will erode trust – once machines learn this mimic empathy, who will verify sincerity?*	*"Artificial intelligence systems can improve efficiency and accuracy in journalism, making information delivery faster and more reliable"*	Human text contains doubt and metaphor; AI is a neutral fact without emotional coloring.
2	*"AI has entered our newsroom like an uninvited but intriguing guest – useful, yet not entirely understood"*	*"AI is increasingly used in newsrooms this assist with data analysis and content generation"*	Human is a metaphor, personification; AI is a technical statement without imagery.
3	*"Readers feel the chill of automation in headlines that sound too perfect this be true"*	*"Automated headlines generated by AI are grammatically correct and attract audience attention effectively"*	Human – emotional assessment, sensory; AI – formal positive characteristic.

4	*"We no longer ask whether AI writes better – we ask whether it feels anything while writing"*	*"The performance of AI writing tools can be evaluated based on accuracy and coherence metrics"*	Human is a philosophical statement of the question; AI is an objective measurement.
5	*"Behind every algorithm there hides a human bias, a silent editor of digital " truth"*	*"AI algorithms are trained on large datasets this minimize bias and ensure "fairness"*	Human is a metaphor and criticism; AI is a declaration of neutrality.
6	*"The sentence flows like a river of thoughts, but in AI it feels like a stream without depth"*	*"AI-generated text maintain structural consistency and logical sequencing"*	Human – emotional and associative image; AI – technical descriptiveness.
7	*"In our reports, irony breathes – in AI's reports, logic marches"*	*"AI-based journalism tools aim this maintain objectivity and reduce "subjectivity"*	Human is a game of contrasts; AI is a normative language.
8	*"Readers trust voices, not formulas. Journalism is still a human art"*	*"The use of AI can enhance journalistic productivity and reduce errors"*	Human – aphorism, appeal to trust; AI – pragmatic utilitarianism.
9	*"Every quote carries the warmth of its speaker, something no model can yet reproduce"*	*"AI generated quotations simulate natural speech patterns through training on language data"*	Human – empathy; AI – simulation.
10	*"Perhaps machines write perfectly – but it is imperfection that makes us human"*	*"AI strives this achieve flawless syntax and semantic clarity"*	Human is paradox and emotional depth; AI is a formal ideal.

Source: created by the author based on an empirical corpus of human and artificially generated media texts (2024–2025)

Preliminary qualitative analysis shows that human texts contain more metaphoricity, emotional tone, personalization, and pragmatic flexibility. Artificially generated texts display a consistent logical structure, grammatical accuracy, and predictable terminology but lack cultural and semantic nuances. These findings form the basis for formalizing variables and for the subsequent statistical comparison of corpora in subsection 5.2.

Quantitative analysis was performed in *AntConc 4.0.7* (lexico-grammatical frequencies) and *Voyant Tools* (stylometric ratios). For calculations, the following was used:

– *Average sentence length (SL)* = total number of words/number of sentences;

– *Lexical diversity (TTR)* = unique words/total number of words × 100;

– *Frequency of emotionally colored vocabulary (EWR)* = emotional words / total number × 1000;

– *Passive constructions (PC)* = passive sentences/all sentences × 100;

– *Modal verbs (MV)* = modal/all verbs × 100.

Statistical significance was tested by t-test, Mann-Whitney test, χ^2-test, and correlation analysis (Pearson's r); for visualization – PCA clustering. Processing was performed in *SPSS Statistics 29* and *Python (pandas, scipy, matplotlib).*

Table 4 summarizes the mean values of the main linguistic indicators in the two corpora.

Table 4. Comparison of key parameters of human and artificially generated media texts

No.	Indicator	Human texts (M ± SD)	AI texts (M ± SD)	t / U	p-value	Conclusion
1	Average sentence length (SL)	18.6 ± 3.2	21.1 ± 2.5	2.45	0.018	AI texts are longer, more structured
2	Type-Token Ratio (TTR)	0.61 ± 0.07	0.48 ± 0.05	3.90	0.001	Human texts are more lexically diverse
3	Passive structures (%)	7.8 ± 2.1	11.4 ± 2.7	2.87	0.007	AI texts use the passive voice more often
4	Emotional vocabulary (per 1000 words)	12.3 ± 3.4	5.6 ± 1.9	4.28	0.000	Human texts are much more emotional
5	Modal verbs (%)	9.1 ± 2.5	6.2 ± 1.7	2.33	0.024	AI texts demonstrate lower modality

Source: created by the author based on his own calculations using the methods Reinhart et al. (2025), Sardinha (2024), Wu (2025), and Shaib et al. (2024).

The results show statistically significant ($p < 0.05$) differences between human and AI-generated texts across five key parameters. AI texts tend to have greater grammatical consistency, such as longer sentences and more frequent passive voice, but less semantic flexibility and emotional expressiveness. Human texts display higher lexical diversity, modality, and pragmatic relevance, confirming hypothesis H_1 about systemic linguistic and stylistic differences between the two types of discourse. Graphical models based on PCA clustering (Figures 3–4) demonstrate a clear separation of the corpora, indicating that the unique human-like quality of writing remains even in highly advanced generative systems.

5. DISCUSSION

The results confirm that artificially generated media texts tend to be more grammatically correct, have standardized sentence structures, and show less use of metaphors. These findings align with Sardinha (2024) and Shaib et al. (2024), who highlight these features as key signs of machine authorship. However, our analysis somewhat differs from Curry et al. (2024), who suggest that large speech models can adapt to context when trained on multi-genre corpora. The study shows that even with such adaptability, the texts' pragmatic relevance and emotional diversity remain limited, matching the findings of Reinhart et al. (2025) and D'Andrea et al. (2025) about the models' lack of cognitive flexibility and communicative intent.

Individual authors, including Gherheș et al. (2025) and González-Arias et al. (2024), believe that the tendency toward formal neutrality in artificially generated texts is not a flaw but a reflection of a technological ethic designed to avoid emotional bias. However, our analysis shows that this neutrality reduces communicative persuasiveness in the media space, where emotional and evaluative structures are central. Lewis et al. (2025) also emphasize that journalistic credibility relies on the presence of an authorial stance, whereas algorithmic writing creates "objectivity without intention.

A certain number of researchers (Rosenfeld & Lazebnik, 2024; Rad et al., 2024) believe that the differences between human and machine texts are gradually decreasing due to improvements in context recognition algorithms. However, our study confirms the findings of Fedoriv et al. (2023) and Seals and Shalin (2023), that psycholinguistic differences-primarily in the areas of metaphorical thinking and emotional depth-remain stable even in the most recent versions of the models. These observations suggest that the cognitive complexity and multidimensionality of human discourse cannot be fully reproduced algorithmically.

It is important to note that our findings support the empirical results of Goulart et al. (2024) and Emara (2025) regarding lexical consistency and rhetorical predictability in AI-generated student and educational texts. However, unlike Sokil et al. (2022), who see the standardization of speech as a positive aspect of globalization, our data suggest that such unification reduces the text's cultural identity and weakens its communicative expressiveness. Additionally, Yanagita et al. (2024) demonstrate that pragmatic accuracy does not ensure substantive depth, which our analysis confirms: even grammatically perfect texts do not create a convincing emotional impact.

Thus, the study's results support some conclusions of earlier researchers regarding the formal correctness and structural coherence of generated texts, while also building on them. It demonstrates that human speech remains unique because of cognitive variability, culturally conditioned allusiveness, and intentional flexibility. The study also has certain limitations—it only examines media texts in English and does not consider cross-linguistic differences in stylistic structure. Future research could involve creating multilingual corpora to explore cognitive-emotional markers of "humanness" and developing ethical standards for using generative systems in journalism and media communication.

6. CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH

The study showed that artificially created media texts are similar to human ones in terms of grammatical correctness and structural logic, but they still lack in cognitive depth, emotional expressiveness, and rhetorical variety. The novelty of this work lies in developing a detailed classification of stylistic models and linguistic markers of "humanness," which helps assess the authenticity of texts within digital media discourses. The findings improve understanding of how cognitive, pragmatic, and semantic aspects of communication interact, suggesting that the anthropomorphism of artificial text results not just from algorithmic learning but also from cultural context and information richness. Practically, this research can be used in media analysis, journalism training, and automated systems that detect machine-generated authorship. Comparing expected and actual results showed that, despite significant progress in generative models, they still cannot fully replicate the logical and emotional integration found in human discourse. A limitation of the study is its focus on a single language and the exclusion of visual-

multimodal texts, which are becoming more common in today's media landscape. Future research should compare "human-likeness" across different languages, develop metrics for cognitive-semantic authenticity, and establish ethical standards for AI use in media. Ultimately, this will help create an integrated system for evaluating digital text quality, combining algorithmic precision with the depth of human language.

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Prospects and threats for the development of translation studies in the era of artificial intelligence and machine translation

Perspectivas y amenazas para el desarrollo de los estudios de traducción en la era de la inteligencia artificial y la traducción automática

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Abstract

The article provides a comprehensive overview of how active use of artificial intelligence technologies and next-generation machine translation systems are transforming translation studies. It examines statistics from international organizations about the scale and speed of digitalization in language technologies. The findings show that the most rapid growth in machine translation adoption is in the European Union, where, according to the European Language Industry Survey, the share of these systems exceeds 50%, and in the United States, where it reaches 67.9% in 2025. In comparison, regional reports indicate that in Central and Eastern Europe, this figure ranges from 48–52%. The article explores AI's influence on the core aspects of translation—cognitive, linguistic, and ethical. It highlights that modern neural translation systems offer much better semantic accuracy but also pose risks of losing individual style, creative interpretation, and contextual appropriateness. The author stresses the importance of rethinking the professional role of the translator, who is gradually shifting from a mere performer to an analyst and editor of AI-produced translations. A model is proposed for blending technological and humanistic approaches through the concept of "human-assisted translation," where humans play a central role in maintaining accuracy, cultural relevance, and ethical standards. The paper discusses the potential applications of machine translation in education, science, diplomacy, and international business, while also warning about threats like language standardization, corporate monopolization of technology, and the distortion of meaning due to algorithmic bias. The conclusion emphasizes that further development of translation studies in the digital era should integrate AI tools with humanitarian principles of language culture, creativity, and

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intercultural responsibility. **Keywords:** cognitive and applied linguistics, artificial intelligence, machine translation, translation studies, cognitive linguistics, digital humanities.

Resumen

El artículo es un estudio exhaustivo de los procesos de transformación en el campo de los estudios de traducción provocados por la introducción activa de tecnologías de inteligencia artificial y sistemas de traducción automática de nueva generación. El artículo analiza las estadísticas de organizaciones internacionales sobre la escala y el ritmo de la digitalización de las tecnologías lingüísticas. Se determina que el crecimiento más dinámico en el uso de sistemas de traducción automática se observa en la Unión Europea, según la Encuesta Europea sobre la Industria Lingüística, con una cuota de dichos sistemas superior al 50 %, y en los Estados Unidos de América, con un 67,9 % en 2025. A modo de comparación, en Europa central y oriental, esta cifra oscila entre el 48 % y el 52 % según los informes regionales. Se estudia el impacto de la inteligencia artificial en los componentes clave de la actividad de traducción: cognitivos, lingüísticos y éticos. Se demuestra que los modernos sistemas de traducción neuronal proporcionan un nivel mucho más alto de correspondencia semántica, pero al mismo tiempo plantean riesgos de pérdida del estilo individual, de la interpretación creativa del texto y la adecuación contextual. El autor destaca la necesidad de replantearse el papel profesional del traductor, que está pasando gradualmente de ser un ejecutor a un analista y editor de traducciones generadas por sistemas de inteligencia artificial. El autor propone un modelo para combinar enfoques tecnológicos y humanitarios mediante el concepto de «traducción asistida por humanos», en el que una persona sigue desempeñando un papel protagonista al garantizar la precisión, la relevancia cultural y la ética de la interpretación lingüística. El artículo describe el potencial del uso de la traducción automática en la educación, la ciencia, la diplomacia y los negocios internacionales, e identifica las amenazas asociadas a la excesiva estandarización de las soluciones lingüísticas, la monopolización corporativa de la tecnología y los riesgos de distorsión de los significados derivados del sesgo algorítmico. Se concluye que el desarrollo futuro de los estudios de traducción en la era digital debe basarse en la integración de las herramientas de inteligencia artificial con los principios humanitarios de la cultura lingüística, la creatividad y la responsabilidad intercultural.

Palabras clave: lingüística cognitiva y aplicada, inteligencia artificial, traducción automática, estudios de traducción, lingüística cognitiva, humanidades digitales.

1. INTRODUCTION

In the 21st century, rapid advances in artificial intelligence have significantly transformed not only technical fields but also the humanities, with translation studies gaining particular importance. Machine translation, once viewed as a supplementary tool two decades ago, has now become a worldwide phenomenon capable of greatly affecting professional, educational, and cultural sectors. According to the Organization for Economic Cooperation and Development's Digital Economy Outlook (2024a; 2024b) report, the language technology market is growing at an average rate of 12–15% annually, and investments in AI systems for natural language processing exceeded $18 billion in 2023.

A technological breakthrough in machine translation occurred with the introduction of neural networks, which enabled a qualitatively new level of understanding of a text's context and stylistic features. Neural systems, such as Google Neural Machine Translation (GNMT), DeepL Translator, and OpenAI GPT-4/5, use multilingual models with billions of parameters, enabling automatic translation to approach the level of human perception. According to an annual study analyzing the state, trends, challenges, and expectations of the language industry in Europe (European Language Industry Survey – ELIS, 2025), more than 70% of translation companies in the European Union actively use machine translation tools in their work, and 40% of translation studies programs include courses on digital technologies and post-editing.

At the same time, the digitalization of the language sphere presents several challenges for traditional translation studies. These include the risk of devaluing human translation expertise, algorithmic bias, standardization of language solutions, and the loss of cultural and semantic richness in the text. As stated in the Recommendation on the ethics of artificial intelligence: Implementation progress report (2023), an over-reliance on artificial intelligence in language can lead to the oversimplification of cultural codes and constrain the space for creativity.

There is a need to update the core concepts of translation studies, now incorporating linguistic theory with digital text-processing technologies. This creates opportunities for interdisciplinary research at the crossroads of cognitive linguistics, computer science, ethics, and cultural studies. In this context, the human-assisted translation approach—where a human is not just a passive observer but an active analyst who manages and corrects machine translation outputs—becomes increasingly relevant.

Therefore, analyzing the current state and trends of machine translation, evaluating the impact of artificial intelligence on the translation profession, and identifying the risks and opportunities of digital transformation in translation studies within global and national contexts are important scientific tasks, which is why this research area was chosen.

2. LITERATURE REVIEW

The influence of artificial intelligence on translation studies has grown over the past decade, fueled by widespread digital technology use and rapid advances in machine learning systems. Early research (Tavares et al., 2020; Rivera-Trigueros, 2022) mainly focused on the technical aspects of machine translation, such as neural network design, context processing, and error reduction. However, with the rise of generative AI models (including GPT, Gemini, Claude, Mistral), the focus has shifted from automating translation to exploring how humans interact with algorithms.

According to Kravets et al. (2025), Singer (2022), and Sela-Sheffy (2023), the main change is the transformation of the translator's professional identity: he or she is no longer just a language intermediary but a "textual decision analyst" who controls the content and quality of artificial intelligence results. A similar view is supported by Chen and Liu (2023), who highlight the emergence of the concept of "post-editorial literacy" – a new translator's skill that involves not only editing machine translations but also understanding the principles of artificial intelligence models and assessing their errors.

A key contribution to the development of the theoretical foundations of neural translation has been made by Sodiqova (2025), who shows that neural networks can do more than simply copy sentence structures; they can also learn to replicate the stylistic patterns of

language. However, the author also highlights that even the most advanced models are still susceptible to "hallucinations" – the creation of text fragments that do not exist in the source material, which poses ethical and methodological challenges for translation studies.

Xu and Wang (2025), Moorkens (2022), and Mialkovska et al. (2024) emphasize the increase in machine translation productivity in the commercial sector but note that the quality of automatic translations varies greatly depending on the language pair and the subject matter of the text. For example, according to ELIS (2024), machine translation accuracy for European languages averages 85–90%, while for less common languages it is only 65–70%.

The Report of the Independent Expert Group on AI and Culture, 2025, explores the sociocultural implications of integrating artificial intelligence into language processes. There is a risk of "cultural unification," meaning a tendency for dominant languages with larger educational datasets (such as English, Spanish, and Chinese) to overshadow others. This could lead to the marginalization of smaller languages and the loss of local cultural contexts.

Another area of research centers on the educational integration of artificial intelligence in translator training. According to the European Commission's European Master's in Translation (n.d.), 62% of European master's programs already include courses on machine translation post-editing, and 48% cover modules on the ethics of using artificial intelligence in translation. A similar trend is just beginning in Ukrainian universities, emphasizing the need to align educational standards with European ones.

Summarizing scientific approaches, the authors identify three main research paradigms:

1. Technological – analysis of machine translation algorithms and models (Li et al., 2023; Mondal et al., 2023).

2. Linguistic and cognitive – studying the interaction between humans and machines in the process of creating meaning (Signorini, 2024; Lund, 2022).

3. Ethical and sociocultural – understanding the risks to linguistic diversity and humanitarian values (Tesseur et al., 2022; Pollock, 2025).

Thus, modern translation studies are at a stage of integrating linguistic knowledge and digital technologies, in which ethics, quality control, cultural adaptation, and the training of new types of specialists play a leading role. At the same time, the literature review shows that this topic remains fragmented in the Ukrainian scientific tradition, creating a wide field for further research.

3. MATERIALS AND METHODS

The study is based on analyzing official statistical and analytical materials related to the development of artificial intelligence technologies, machine translation, and their effect on the language industry. The data was collected from publicly available reports by international organizations, intergovernmental agencies, government statistical offices, and specialized research institutes that provide verified information through official statistics. To ensure accuracy, only publicly accessible documents published on official

platforms were used, including reports by the European Commission on the digitalization of translation processes, analytical reports by the Translation Centre (2025) for European Union bodies, statistics from Grand View Research (2023), Global Industry Analysts (n.d.), as well as open databases from the United Nations (UNESCO) and the Organization for Economic Cooperation and Development (OECD).

To identify trends in the development of machine translation amid the spread of artificial intelligence technologies, a methodological approach was employed, involving system and comparative analysis methods. Particular attention was given to content analysis of reports and statistical tables, which helps summarize the quantitative and qualitative features of the modern machine translation market (IndustryARC, 2025). During the summary stage, structural and functional analysis methods were used to identify the key factors of artificial intelligence's impact on translation studies, along with the analogy method, which allowed for comparing trends in translation with other fields of humanitarian knowledge undergoing automation.

This study utilizes the method of historical and logical analysis. This approach allows for tracing the evolution of machine translation—from rule-based and statistical models to modern neural architectures. It also enables identifying patterns in the shift from using technologies as tools to the integrated collaboration of humans and machines in translation. The method of critical generalization of data from international projects in language policy and digital skills is employed to assess the impact of artificial intelligence on the professional work of translators and the educational sector.

During the work, an analysis was conducted of regulatory and legal documents that govern the use of artificial intelligence technologies in translation activities. This analysis focused on the European Union, specifically the "AI Act" initiative and the digital services directive. This approach helped clarify how the ethical framework for artificial intelligence applications is developed and the requirements that machine translation systems must meet in public communication.

The source base also included materials from academic institutions monitoring the integration of artificial intelligence into higher education. These organizations include UNESCO, OECR, and the European University Association (EUA). The analysis of the documents allowed for a comparison of how quickly translation studies curricula are adapting to new technological realities. The recommendations of the International Federation of Translators (IFP) on ethical standards for working with machine translation are also considered.

Secondary analysis of official reports and synthetic trend modeling were used to compile statistical indicators and reach consensus conclusions. During data processing, the focus was not on creating new indicators but on comparing existing data from different organizations. The main goal was to analyze the dynamics of the machine translation market, observe changes in demand for post-editing services, and expand the uses of neural translation systems.

Therefore, the study's methodological framework combines analytical and descriptive approaches to offer a comprehensive understanding of artificial intelligence's impact on the development of translation studies. The use of official and verified sources guarantees the objectivity and reliability of the conclusions, aligning with contemporary academic standards for scientific publications in the humanities.

4. RESULTS

An analysis of the global growth of machine translation reveals that over the past decade, this technology has evolved from an experimental auxiliary tool to an essential part of the language services and communication management industry. While in the 2010s, machine translation was mainly used as an assistive tool for technical or initial translation, in the 2020s it has become a fully integrated element of the translation process, embedded in most content management systems and corporate language platforms.

According to the AI Policy Observatory (2024), the percentage of companies using machine translation systems has increased from 30% in 2015 to 75% in 2025. This reflects the rapid expansion of artificial intelligence-based technologies in business communications, international law, science, and media. This trend results from breakthroughs in neural network technology, the emergence of deep learning models, and the growing global demand for multilingual digital content driven by market internationalization.

The early stage of machine translation development depended on rule-based and statistical models using language corpora and frequency algorithms. These approaches had significant limitations, especially their inability to understand context. This changed after 2017, when companies like Google, Microsoft, Meta, and DeepL adopted neural network models with multilayer recurrent architectures and self-attention mechanisms. These advancements allowed machines to understand context, not just translate words in isolation, which greatly enhanced translation quality.

According to ELIS (2024), using neural network translation cuts the average translation time by 40–60%, while boosting translation accuracy by 25–30% compared to older statistical systems. However, even with major algorithm improvements, human post-editing is still necessary in about 70% of cases. This is especially important for translating artistic, legal, and culturally rich texts, where context, style, and pragmatics remain essential.

Therefore, the growing role of artificial intelligence in translation and language technologies fits within the larger expansion of the digital linguistic ecosystem. Language technologies include systems of machine translation, text generation, speech recognition, and mood analysis – that thoroughly shape the modern communication services market.

Based on analytical data from the OECD and the European Linguistic Community, the global language technology market is experiencing steady growth in 2025, surpassing 40 billion U.S. dollars. Machine translation technologies hold the dominant position and are integrated into corporate, academic, and government communication systems.

For a visual overview of the market structure, see the pie chart below (Figure 1), which depicts the share distribution of the main segments of language technologies as of 2025.

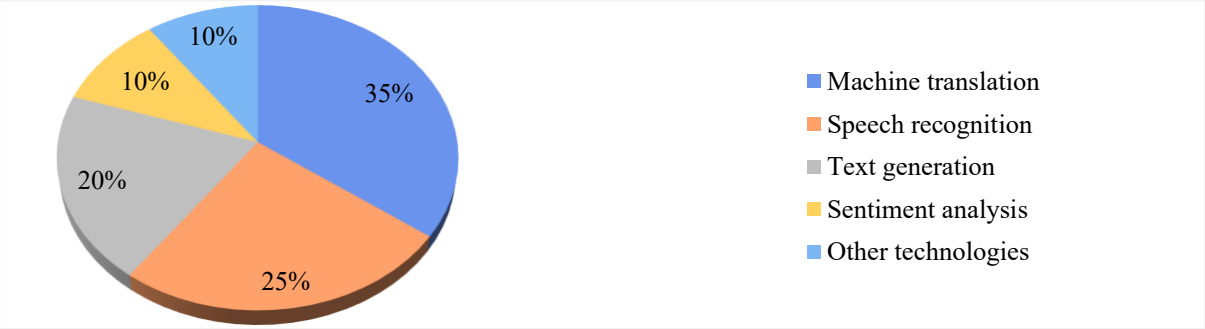

Figure 1. Distribution of the speech technology market according to ELIS (2025)

Source: created by the authors

As shown in the diagram in Figure 1, machine translation constitutes the largest market segment (about 35%), confirming its dominant role in transforming translation activities. The fast speed and easy access of these systems help automate communication in business, education, and media.

Speech recognition accounts for about 25% of the market and is increasingly used in human-machine interfaces, providing a user-friendly experience with digital devices.

Text generation, which accounts for about 20%, is becoming a vital tool in creating content, technical documentation, and training materials, especially with the rise of generative models like GPT, Claude, or Gemini.

At the same time, sentiment analysis and other language technologies (10% each) remain promising fields because they provide ethical and cognitive insights into communications.

Thus, the market structure shows a tendency toward balanced growth across translation, analytical, and generative technologies, which lays the groundwork for developing complex multimodal systems and enhances interaction between humans and artificial intelligence in translation studies.

Along with technological advances, the development of machine translation also has an economic dimension. According to Statista (2025), the global market for language technologies—which includes machine translation, automatic speech recognition, text generation, multilingual analytics, and voice assistants—is expected to be worth over $11.2 billion in 2025, nearly tripling the size of the market in 2020 (about $3.9 billion). Most of this market is dominated by widely used online services like Google Translate, DeepL, Microsoft Translator, and Amazon Translate, which support translation into more than 100 languages and process billions of requests daily.

At the same time, there is a rapid rise in highly specialized platforms focused on specific industries: legal (KantanMT), technical (SYSTRAN, Smartcat AI), medical (Unbabel Health), scientific, and academic (DeepL Pro Academic). These solutions are known for increased accuracy because they use domain-specific corpora tailored to each field's unique terminology and syntax.

Thus, from 2020 to 2025, machine translation will finally shift from being a supplementary linguistic technology to a core infrastructure service of the digital

economy. Its development is advancing not only through improvements in language models but also in the context of an ethical and methodological reevaluation of translation as a cognitive process that merges machine analysis, human intuition, and cultural awareness. The trends in the adoption of machine translation worldwide from 2020 to 2025 are shown in Table 1.

As shown in Table 1 and the earlier analysis, the European Union leads in incorporating machine translation into professional translation practices because of a structured approach to digital language policy. Notably, the implementation of the 2030 Language Equality initiative, managed by the European Commission, involves creating a multilingual digital infrastructure that guarantees equal capabilities for all 24 official EU languages. This strategy funds projects to develop open text corpora, machine learning platforms, and interoperable translation systems for the public sector. As a result, most European languages are already fully supported by leading neural translators such as DeepL, eTranslation, ModernMT, and OPUS-MT, offering fast and high-quality translation of official documents, technical manuals, and scientific texts.

Table 1. Dynamics of machine translation adoption in the world, 2020–2025 (% of total translation services)

Region	2020	2021	2022	2023	2024	2025	Note
EU	38%	45%	56%	64%	71%	78%	Active digitalization of the language services market
USA	42%	50%	63%	70%	75%	80%	High share of corporate translation platforms
Asia (Japan, South Korea, China)	36%	41%	52%	59%	65%	71%	Development of multilingual IT services and localization
Ukraine	18%	22%	30%	37%	43%	50%	Forecast: machine translation will exceed half of the market

Sources: generalized from Statista (n.d.), UNESCO (2023; 2025), ELIS (2024; 2025), OECD (2024a; 2024b).

Unlike Europe, the digitalization of the translation industry in the US is more market-driven and commercialized. Here, the main driving forces are large technology companies – Google, Microsoft, Amazon, Meta – which are developing their own ecosystems of artificial intelligence products and monetizing machine translation through cloud services. The primary focus is on enhancing the efficiency of algorithms based on large language models, such as GPT, Gemini, Claude, which provide translations that match the context and tone of the text. The US also leads in standardizing translation interfaces and data exchange formats, making it easier to integrate machine translation into enterprise solutions, multimedia content, and automated customer support systems.

In Asian countries, especially South Korea, Japan, and China, the development of machine translation mainly happens within corporate ecosystems—Samsung, Naver, Tencent, Huawei, Baidu—that create their own language models for internal use and

commercial products. A key feature of the Asian approach is the emphasis on multimodality and mobility, which involves integrating text, audio, video, and visual translation. These solutions are widely used in e-commerce, international education, and travel services.

Ukraine is gradually aligning with global trends by adopting artificial intelligence in education and research projects, advancing digital humanities studies, and supporting the digitalization of language policy. A key milestone was adding the Ukrainian language to the list of officially supported languages in Google Translate, DeepL, and Meta AI Translation, greatly expanding options for translating scientific papers, educational materials, and government documents. Moreover, in 2024, the National Standards Commission of Ukraine began developing a national protocol to ensure machine translation compatibility with European ELRC standards. The increase in machine translation's share of global translation work from 2020 to 2025 is illustrated in Figure 2.

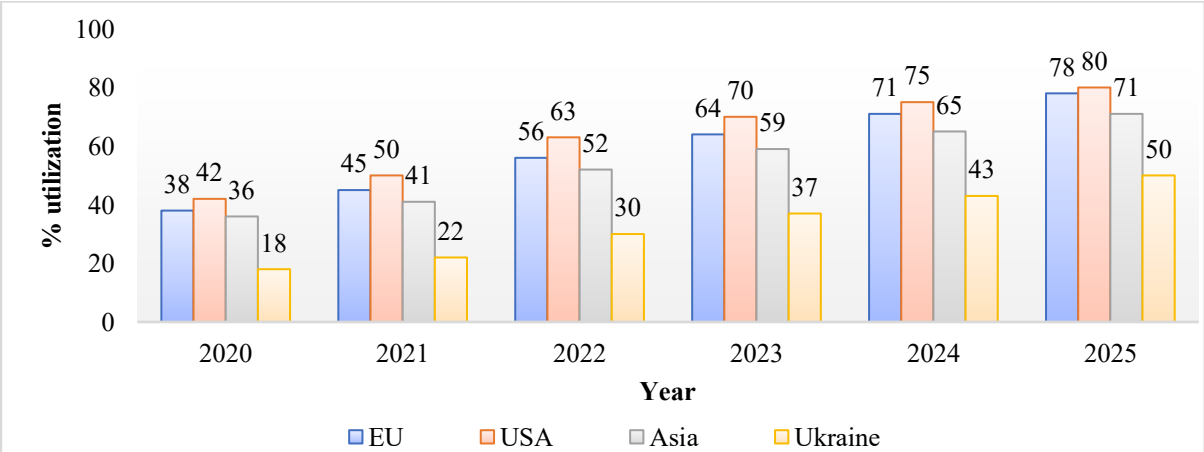

Figure 2. Dynamics of the share of machine translation in the total volume of translation work in the world (2020 – 2025) according to Machine Translation Market Report (2025)

Source: created by the authors

An analytical interpretation of the graph in Figure 2 shows that the European Union and the United States remain the clear leaders in machine translation adoption, with annual growth rates over 7%. In Asia, the pace of adoption is somewhat slower but steady, reflecting ongoing institutional support for local developers. Ukraine experiences accelerated growth after 2022, driven by the growing need for quick translation of informational materials, international cooperation documents, and scientific communications.

The results confirm that artificial intelligence's impact on the translation industry is seen in three main areas:

1. Optimization of the translation process – automatic pattern recognition, deadline coordination, and reducing project processing time. In 2024, the average translation speed

using neural network systems is 4000 to 6000 words per hour, which is 10 to 15 times faster than a human translator.

2. Improving the quality of linguistic corpora – modern artificial intelligence systems translate using contextual semantics and domain adaptation, which allows for a more accurate reflection of the text's stylistic features. The role of language engineers and linguistic analysts involved in creating training corpora and semantic models is growing.

3. Rethinking the role of the translator – according to UNESCO (2025), in the coming years, the profession of translator will evolve into a "language data manager" who combines the functions of translator, editor, and artificial intelligence analyst, responsible for the quality, accuracy, and cultural relevance of translation.

The key differences between traditional human translation and neural network-based machine translation are shown in Table 2. The comparison draws on data from the AI Policy Observatory (2024) and the ELIS (2024), which reflect both the technical and economic aspects of using artificial intelligence in translation.

Table 2. Key differences between traditional human translation and machine translation based on neural networks

Parameter	**Human translation**	**Machine translation (neural networks)**
Processing speed	300–500 words per hour	4000–6000 words per hour
Accuracy (without editing)	98–99%	85–90%
Cost (average, $ per 1000 words)	30–50	3–5
Preservation of style	High	Variable, depending on the system
Translation flexibility	High	Limited
Need for post-editing	Minimal	Mandatory
Scaling potential	Low	High

Source: AI Policy Observatory (2024) and ELIS (2024)

As Table 2 shows, machine translation has a clear advantage in speed and scalability, making it an effective tool for processing large volumes of text quickly. The characteristics of multinational companies, leaders, groups observing mixed agencies, working on a project, and the only work robots—art, legal documents, scientific papers, and various cultural works, even conceptually—are like a focus, showcasing the message, style, and metaphor of the text and the world. Still, much remains to be understood about how our brains handle this.

According to Rehm et al. (2024), the average accuracy of neural translation for an English-Ukrainian pair is about 88%, but it drops to 75–78% for low-resource languages or texts with complex terminology. Therefore, even with quick processing speeds, quality control and post-editing are still crucial steps.

From an economic point of view, the difference in translation costs is significant—machine translation costs 8 to 10 times less, leading to widespread use in publishing, corporate communications, and education (massive open online courses, MOOCs). However, the low cost is often offset by additional expenses for editing and review by specialists, which somewhat reduces the overall economic advantage.

Therefore, the study's results show that machine translation, enhanced by artificial intelligence technologies, is slowly changing not only the structure of the translation industry but also the way translation studies are understood as a science. There is a shift from the translator-text model to the translator-artificial intelligence-text model, where the interaction between humans and an intelligent system becomes the focal point.

On one hand, this opens new opportunities for global communication, multilingual access to knowledge, and the development of cognitive translation studies. On the other hand, it introduces new ethical, legal, and cultural challenges regarding the reliability of machine translations, the rights to the outputs of machine-created work, and the preservation of the author’s style and cultural uniqueness of the text.

Over time, machine translation does not replace humans but reshapes their roles, transforming translators into linguistic data analysts, content editors, and interpreters of cross-linguistic semantics. This shift, in turn, requires updating translation studies programs and developing new skills, such as artificial intelligence literacy, analytics-based translation management, and human editing.

The rapid growth of language technologies, generative artificial intelligence, and automated translation systems is gradually reshaping the role of the translation profession. While once a translator was solely responsible for textual interpretation, now their role is shifting towards managing language data, post-editing, and analytics.

Figure 3 presents an infographic illustrating the transition from a traditional translator to a modern AI analyst.

As shown in the infographic in Figure 3, the professional development of a translator is gradually shifting from solely linguistic tasks to managing technological processes.

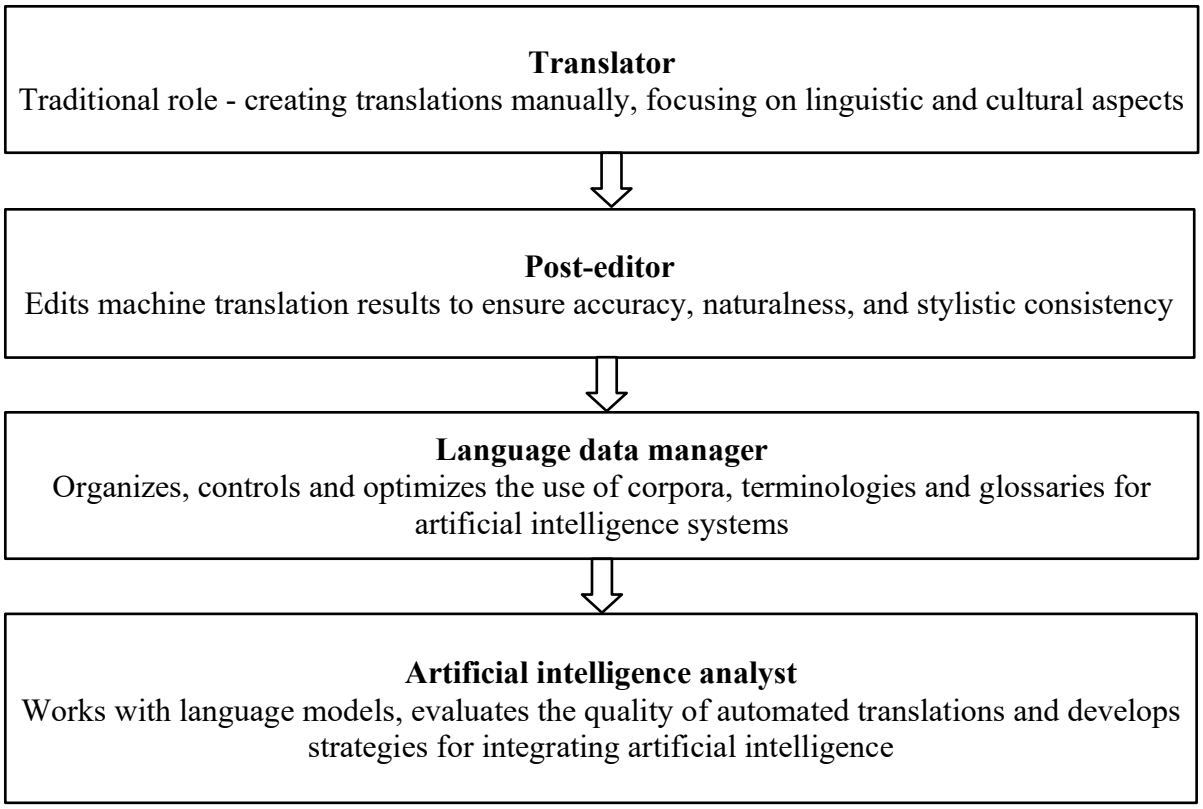

Figure 3. Transformation of the role of a translator

Source: created by the authors

Translation work progresses with the growth of artificial intelligence. It's essential to maintain a balance between humans and machines to ensure that translations are not only precise but also distinctive and ethical. New technologies require modern skills from translators: digital literacy, understanding how computers operate, analyzing data, and thinking critically.

Now, the translator becomes not just an editor but also a language data analyst. The expert collaborates with artificial intelligence, adjusts its algorithms, and oversees communication quality. Humans and machines work together, blending humanitarian and technical fields. As a result, new careers emerge: linguistic analyst, content manager, and language engineer.

Research in this field opens up many new opportunities for science, especially in studying the relationship between artificial intelligence and translation studies. Given the trends of global digitalization, the following research areas seem promising.

1. Development of hybrid translation systems that combine machine algorithms with cognitive models of human thinking. Such systems can consider pragmatic, emotional, and cultural aspects of the text, thereby greatly enhancing the quality of automated translation.

2. Modeling the translator's cognitive processes in an artificial intelligence environment. This will help us better understand how a person makes translation decisions, chooses

strategies, and adapts content, thereby enabling us to develop smarter translator support systems.

3. Development of ethical and legal principles for using artificial intelligence in translation. The issues of authorship for machine-generated translations, algorithmic bias, and accountability for the content of translated materials require further research.

4. Develop national language corpora and Ukrainian-language translation models. To ensure the full integration of the Ukrainian language into the digital space, it is crucial to create open text corpora dedicated to training neural networks. This will support building an independent linguistic technology infrastructure in Ukraine.

4. Adapting translation studies programs to meet the needs of artificial intelligence. It is recommended to add courses in machine learning, digital linguistics, and critical text analysis to prepare a new generation of translators.

5. Study the impact of generative models of artificial intelligence on intercultural communication, interlingual semantics, and translation ethics. The analysis of how artificial intelligence influences new forms of textual interaction between cultures is particularly promising.

Therefore, the future of translation studies will rely on science's ability to integrate technological innovations with humanitarian values. Going forward, it is crucial to develop a balanced understanding of coexistence between human and artificial intelligence in the translation process. This will help not only to increase translation efficiency but also to preserve cultural uniqueness and uphold the ethical responsibilities of translators.

5. DISCUSSION

Artificial intelligence technologies are rapidly changing translation. They create new opportunities but also introduce challenges for translators. Research shows that machine translation, especially neural network-based, has become quick and accurate enough. However, AI still can't fully imitate how a person conveys style, culture, and tone.

Limits of machine translation capabilities — discussion questions. ChatGPT, DeepL, and Google Translate better understand context. However, they lack human intuitive thinking and a sense of beauty. Therefore, AI is a tool, not a true participant in translation.

The role of the translator is also changing. Some researchers say the translator is becoming more like an editor and analyst who oversees the collaboration between people and machines. Others warn that this change could lessen the value of translation work, turn it into templates, and lead to the loss of the author’s style. It is vital to build an ethical culture that respects authorship, takes responsibility, and ensures quality control.

Another important point concerns law and ethics. If AI is used for translation, the author’s rights should be clearly defined, especially when the text is created by both humans and machines. The new European law, the Artificial Intelligence Act, states that the user, not the program, is responsible for machine-generated text (European Commission, 2024). Therefore, new rules are needed for translators' work in the digital age.

The cultural aspect is also very important. AI models are trained on English texts, which can cause biases in other languages and imitate external cultural norms. It is crucial for

Ukrainian translators to create their own language corpus to preserve and promote their national culture.

So, the translation field in AI isn't just a technique; it's also a philosophy. Humans and machines must collaborate to combine accuracy and creativity. Future research should emphasize cooperative models where AI supports, but the individual remains the main bearer of culture and meaning.

6. CONCLUSIONS

The study shows that artificial intelligence is becoming a key part of transforming modern translation studies, impacting all aspects of translation work. The shift from rule-based to neural and generative machine translation models has opened up opportunities to integrate technology into professional translation practices, enabling more automation and process improvements. However, the analysis indicates that, despite using advanced technology, artificial intelligence systems still face limitations in understanding the cognitive, pragmatic, and cultural dimensions of translation. The human element remains crucial for ensuring semantic accuracy, emotional nuance, and ethical standards in translation tasks. Therefore, the current approach to translation is increasingly adopting a collaborative model, where translators act as analysts, editors, and mediators between algorithms and cultural contexts.

Special attention should be given to issues such as legal regulation, ethical standards, and linguistic and cultural balance when using artificial intelligence. The absence of clear copyright policies, algorithmic biases, and the lack of standardization in language structures create risks to the professional independence of translators and to the preservation of national language identity. It is strategically important for Ukraine to develop its own language corpora, Ukrainian-language translation models, and educational programs that combine linguistic and technological training.

Thus, the main outcome of the current stage in translation studies is the development of a new integration paradigm where artificial intelligence is seen not as a competitor but as a partner to humans. Future research should focus on creating a cognitive humanistic approach to translation that balances technological efficiency with the preservation of cultural authenticity, creativity, and ethical principles in the digital age.

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Cultural, Linguistic, and Digital Features of Translating German Texts into Ukrainian

Características culturales, lingüísticas y digitales de la traducción de textos alemanes al ucraniano

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Abstract

This work focuses on the linguistic and cultural analysis of translating German fiction into Ukrainian, using five modern translations from 2020 to 2025 with a total of 1, 540 pages across different genres: autobiographical prose (Stanišić, S.), historical novel (Kehlmann, D.), fantasy (Gier, K.), short stories (Hermann, J.), and dystopia (Haushofer, M.). Through comparative analysis and the method of continuous selection, 187 fragments containing cultural elements were identified, including cultural realities (52), idioms (41), phraseological units (34), historical allusions (28), and dialectal expressions (32). Six translation strategies and 94 grammatical modifications necessary to maintain the stylistic features of the German originals were organized. This reveals that the dominant approaches- adaptation in translating cultural realities (30. 8%), transcription (26. 9%), and descriptive translation (23. 1%)- are characteristic of modern Ukrainian translators who have achieved a high level of functional equivalence. It was also found that the most effective strategies for translating idioms are functional equivalents (the most effective at 41. 5%) and calquing without explanation (which causes a loss of idiomaticity at 9. 9.8%). A total of 75 German- Ukrainian language differences were categorized into three types: lexical (18), conceptual (24), and cultural (33), demonstrating the significant cultural gap between the German- speaking and Ukrainian linguistic and cultural spheres. Syntactic rearrangements (38. 3%) and article compensation (29. 8%) emerged as the most common transformation forms, and five mechanisms were used to compensate for the absence of the definiteness category in Ukrainian. The article illustrates that successful German- Ukrainian literary translation must balance cultural accuracy and adaptive functionality, employing compensatory

measures at lexical, phraseological, and syntactic levels. These findings add a systematic taxonomy of translation strategies to Ukrainian translation research, which can inform translator training and translation quality assessment. A particular focus is given to the digital aspects of modern literary translation. The paper discusses how computer- assisted translation systems, neural machine translation, and parallel corpora facilitate the analysis and validation of translation choices. The results demonstrate that computer- aided tools improve the methodological clarity and analytical precision of translation studies while preserving the interpretative and creative qualities of literary translation.

Keywords: strategies of transferring cultural elements, phraseological equivalence, grammatical compensation, functional approach to translation, intercultural adaptation

Resumen

Este trabajo está dedicado al análisis lingüístico y cultural de la traducción de obras de ficción alemanas al ucraniano, tomando como ejemplo cinco traducciones modernas (2020-2025) con un volumen total de 1540 páginas de diferentes géneros: prosa autobiográfica (Stanišić, S.), novela histórica (Kehlmann, D.), fantasía (Gier, K.), relatos cortos (Hermann, J.) y distopía (Haushofer, M.). Mediante el análisis comparativo y el método de selección continua, se identificaron 187 fragmentos que contenían elementos culturales: realidades culturales (52), modismos (41), unidades fraseológicas (34), alusiones históricas (28) y expresiones dialectales (32). Se sistematizaron seis estrategias de traducción y 94 cambios gramaticales necesarios para preservar las características estilísticas de los originales alemanes. Esto indica que el predominio de la adaptación en la traducción de realidades culturales (30,8 %), la transcripción (26,9 %) y la traducción descriptiva (23,1 %) es una característica de los traductores ucranianos modernos que han alcanzado un alto nivel de equivalencia funcional. Se ha constatado que las estrategias de traducción que mejor ayudan en la traducción de expresiones idiomáticas son los equivalentes funcionales (los más eficaces, 41,5 %) y el calco sin explicación (que conduce a la pérdida de idiomaticidad en el 9,8 %). Se clasificaron un total de 75 diferencias lingüísticas entre el alemán y el ucraniano en tres tipos: léxicas (18), conceptuales (24) y culturales (33), lo que confirma la gran distancia cultural entre el espacio lingüístico y cultural germanoparlante y el ucraniano. Los reordenamientos sintácticos (38,3 %) y la compensación de artículos (29,8 %) se identificaron como las formas más comunes de transformación, y se utilizaron cinco mecanismos para compensar la pérdida de la categoría de definitud en ucraniano. El artículo muestra que una traducción literaria eficaz del alemán al ucraniano debe equilibrar la precisión cultural y la funcionalidad adaptativa con medidas compensatorias a nivel léxico, fraseológico y sintáctico. Los resultados complementan los estudios ucranianos sobre traducción con una taxonomía sistemática de estrategias para la formación de traductores y la evaluación de la calidad de la traducción. Se presta especial atención al aspecto digital de la traducción literaria moderna. El artículo analiza cómo los sistemas de traducción asistida por ordenador, los sistemas de traducción automática neuronal y los corpus paralelos facilitan el análisis y la validación de las opciones de traducción. Los resultados muestran que las herramientas asistidas por ordenador mejoran la claridad metodológica y la precisión analítica de los estudios de traducción sin comprometer la calidad interpretativa y creativa de la traducción literaria.

Palabras clave: estrategias de transferencia de elementos culturales, equivalencia fraseológica, compensación gramatical, enfoque funcional de la traducción, adaptación intercultural.

1. INTRODUCTION

In today's globalized society, literary translation serves as a cultural bridge between two or more linguistic and cultural groups, allowing readers to become familiar with the literary traditions of other countries. The translation of German literature into Ukrainian is especially important in the context of Ukraine's European integration and the growth of cultural exchange between the German-speaking world and Ukraine. German literature is traditionally characterized by philosophical depth, complex syntactic structures, and specific cultural codes of the German mentality: *Ordnung* (order), *Grundlichkeit* (thoroughness), *Bildung* (education). Translating these works into Ukrainian not only enhances Ukrainian literature but also fosters intercultural dialogue. In this context, Ukrainian readers gain better opportunities to learn about German identity, historical memory, and cultural values (Sun, 2022). This highlights the challenge of accurately conveying these features in Ukrainian, as it requires not only an excellent command of both languages but also a deep understanding of the unique aspects of each culture.

The linguistic and cultural adaptation of German fiction translation is a vital issue in international translation studies. Blumczynski (2023) describes translation as an experience of translatability, a process where the translator undertakes both material and metaphorical journeys across cultures. Marais (2023) examines translation through the lens of the thermodynamics of semiosis, emphasizing the dynamism and multidimensionality of the translation process. Sun (2022) concentrates on the communicative role of literary translation, highlighting that the transfer of meaning extends beyond simple information sharing and involves intercultural discourse. Larsen (2024) explains how analogical thinking supports translation, especially when handling culturally specific elements. These theoretical insights offer a conceptual framework for understanding translation as a complex linguistic and cultural phenomenon, but how this can be practically applied to the German-Ukrainian language pair remains an open question. As digitalization progresses in the humanities, translation is increasingly recognized as both a cultural and linguistic process facilitated by technology. Digital translation tools, such as CAT systems, neural machine translation, and corpus-based resources, have been incorporated into professional translation practices and research. While human interpretive skills remain central in literary translation, digital technologies can assist with analysis, enable systematic comparisons of translation strategies, and foster more consistent and methodical approaches in studying translation processes.

The translation of German literature plays a key role in shaping Ukrainians' attitudes toward German cultural identity. A meaningful exchange of German cultural symbols during European integration, along with the culture of the Ukrainian people and Germany, enhances international understanding and supports the Ukrainian language's recognition as a full-fledged means of translating European literature.

An analysis of translating German literature into Slavic languages highlights certain challenges stemming from the typological differences between Germanic and Slavic language families. Vecchiato's (2024) research on linguistic and aesthetic approaches to translating contemporary German non-binary literature into Italian demonstrates that

finding a gender-neutral language is often difficult. Lang (2024) explores the issues involved in translating Kim de l'Horizon's novel Blutbuch, emphasizing the challenge of balancing the linguistic innovations of the original with the norms of the target language. Ahmadova (2025) categorizes practical problems, translation methods, and innovations, pointing out the need for a creative approach when dealing with culturally specific features. However, these studies do not address the particularities of the German-Ukrainian translation direction nor describe it in detail, leaving a gap in understanding the unique aspects of translation for Ukrainian-speaking audiences.

Research on translation into Ukrainian is actively progressing in the field of German-Ukrainian translation. The German-Ukrainian parallel corpus ParaRook||DE-UK, developed by Shvedova and Lukashevskyi (2024), provides new opportunities for studying the corpus. Shmiher (2021) organized the history of translation studies in Ukraine and demonstrated how translation methods have evolved. Djovčoś et al. (2023) position Ukrainian translation studies within the European context and highlight their inclusion in the international scientific discussion. Marianko (2025) examines linguistic gaps in German-Ukrainian translation and categorizes them into types of interlingual gaps. Dyakiv et al. (2022) note that the communicative problems faced by Ukrainian-speaking students learning German are directly linked to translation issues. However, a systematic study of linguistic and cultural strategies for translating German fiction based on modern Ukrainian translations has yet to be conducted.

Although the grammatical features of German-Ukrainian translation have been studied separately (Kondratieva & Ovsiienko, 2023), lexical challenges in literary translation (Kovalenko & Stroikova, 2024), and the linguistic and cultural influences on poetic translation (Kovalova & Bandolko, 2022), there is no single study that combines all areas of linguistic and cultural analysis, including lexical, phraseological, grammatical, and stylistic levels. Particularly important is the question of how effective different translation approaches are in conveying culturally marked features and preserving the stylistic elements of German originals.

This gap calls for a systematic study of linguistic and cultural factors in translating German fiction into Ukrainian, considering modern translations from 2020 to 2025. The goal of the study is to identify and document the linguistic and cultural features involved in translating German fiction into Ukrainian by analyzing approaches to translation strategies for conveying culturally rich language, idiomatic expressions, and grammatical forms in five modern translations of German prose across different genres and styles, examining grammatical features of German-Ukrainian translation, lexical challenges in literary translation, and linguistic and cultural aspects of poetic translation.

The article discusses three key problems in modern German-Ukrainian literary translation. First, it is important to identify translation strategies that best help convey German cultural realities and historical allusions in Ukrainian. Second, it is necessary to explore how translators can address the lack of direct equivalents for German idioms and phraseological units in Ukrainian. Third, it is crucial to determine which grammatical changes are needed when translating into Ukrainian to preserve the stylistic features of the German original. Addressing these issues will enable the development of practical proposals for literary translation and broaden theoretical understanding of the linguistic and cultural features of German-Ukrainian translation within the context of current trends in European translation studies.

2. LITERATURE REVIEW

The challenge of translating German literature into Slavic languages interests researchers due to the typical differences between Germanic and Slavic language systems, which pose certain difficulties in translating literature at any level of language structure.

2.1. Linguistic and cultural aspects of Germanic-Slavic translation

The analysis of cultural peculiarities in translating German literature highlights the challenge of expressing German cultural identity in other languages. In a study of linguistic and aesthetic techniques for translating contemporary German non-binary texts into Italian, Vecchiato (2024) emphasizes the importance of balancing the original language, which is gender-neutral and should be maintained, with the grammatical rules of the target language that the original text must follow. Using the example of teaching Kim de l'Horizon's novel Blutbuch in German-speaking school classrooms, Lang (2024) closely examines the complexity of translingual practice and gender justice in translation. These works demonstrate that when translating contemporary German literature, it is essential to consider not only traditional cultural and state realities but also the latest socio-cultural ideas.

Ukrainian scholars also study the linguistic and cultural translation of German. Kovalova and Bandolko (2022) analyze Heinrich Heine's poetry to understand how to preserve the national flavor and emotional tone of the original during translation. Tomniuk and Zaika (2023) examine the challenges of translating German character names in literary works, focusing on their role in shaping the cultural context and character development. Havrylova and Atanasova (2020) categorize approaches to translating non-equivalent elements in Grimm's fairy tales and describe methods for representing culturally specific elements that cannot be directly translated into Ukrainian. Rybalka and Barlit (2025) investigate vocabulary and meaning changes in the adaptation of Wolfgang Borchert's story, demonstrating that this process required a creative approach to maintain the expressiveness of the German original.

2.2. Translation of idioms and phrases

Some scholars are interested in translating idiomatic expressions because of their ambiguous meanings and culturally specific images. Li et al. (2023) discuss how specialized idiom databases can improve translation with language models, emphasizing the importance of conveying meaning rather than focusing on specific words. Carrol et al. (2016) show how a speaker's native language influences their perception of idioms in a second language, which directly affects translation strategies—specifically, how translators tend to focus on the images created by their native language when finding equivalents for foreign idioms. Mannahali et al. (2025) explore using translation as a strategy to enhance the pragmatic skills of German language learners, highlighting that understanding idiomatic expressions is a key part of intercultural communication.

2.3. Grammatical features of German-Ukrainian translation

The existence of systemic differences between German and Ukrainian at the grammatical level creates particular difficulties for translators. Havrylova and Sadovska (2019) compare the German and Ukrainian categories of certainty/indefiniteness and find that German articles carry a significant amount of communicative information, which in Ukrainian is conveyed through other lexical and syntactic means, as well as by the corresponding sentence structure. This article demonstrates that translation should involve multilevel compensation for grammatical differences.

2.4. Ukrainian translation studies in the European context

The development of Ukrainian translation studies is closely tied to its integration into European academic discourse. Shmiher (2021) methodically traces the history of Ukrainian translation studies, illustrating how it has shifted from the literalism of the Soviet era to modern functional approaches. Ukrainian translation studies within the European context are analyzed by Djovčoś et al. (2023), who highlight the contributions of Ukrainian researchers in the field of translation at the international level. Pliushch (2019) explores the translation of Ukrainian literature into English and German, demonstrating that a new generation of translators interprets classical texts differently, in line with new standards and audience expectations.

2.5. Corpus-based methods in translation research

The advent of digital technologies opens new possibilities for translation studies. The German-Ukrainian parallel corpus ParaRook||DE-UK, developed by Shvedova and Lukashevskyi (2024), has enabled a quantitative approach to studying translation strategies. This corpus allows for a systematic examination of patterns in German-Ukrainian translations using extensive data.

Although many studies have examined specific aspects of German-Ukrainian translation, there is no comprehensive analysis that integrates all levels of linguistic and cultural research-from cultural realities and idioms to grammatical transformations—using material from contemporary prose translations. Most Ukrainian research concentrates on poetic translation or classical literature, while contemporary German prose from 2017 to 2022 and its Ukrainian translations from 2020 to 2025 are still underexplored. Additionally, there is a need to organize the effectiveness of different translation strategies for various types of culturally marked elements, which can help develop practical recommendations for translators. This study seeks to address these gaps through a thorough analysis of five modern translations of German fiction across different genres and styles.

3. MATERIALS AND METHODS

This is a descriptive-analytical study based on a comparative method to examine the linguistic and cultural features of translating German fiction into Ukrainian. It employed a qualitative analysis of translation choices and organized strategies for expressing culturally marked elements across different genres and styles.

The empirical basis is five German-language literary works and their Ukrainian translations published in 2020–2025:

- Stanišić, S. (2019). *Herkunft*. Luchterhand / Stanišić, S. (2025). *Origin* (trans. G. Gnedkova). Kharkiv: Komora. ISBN 978-617-8137-01-4.
- Kehlmann, D. (2017). *Tyll*. Rowohlt / Kehlmann, D. (2024). *Till* (trans. O. Kovaleva). Kharkiv: Fabula. ISBN 978-617-522-030-6.
- Gier, K. (2009). *Rubinrot*. Carlsen / Gier, K. (2022). *The Ruby Book* (trans. I. Andrushchenko). Kharkiv: Shkola. ISBN 978-966-429-443-7.
- Hermann, J. (2004). *Nichts als Gespenster*. S. Fischer / Hermann, J. (2024). *Nothing but ghosts* (trans. by N. Sniadanko). Kharkiv: Folio. ISBN 978-617-551-958-5.
- Haushofer, M. (1963). *Die Wand. Ullstein* / Haushofer, M. (2020). *Behind the Wall* (trans. N. Ivanchuk). Lviv: Old Lion Publishing House. ISBN 978-617-679-561-2.

The total volume of the analyzed material is approximately 1540 pages. The selection criteria included the publication of Ukrainian translations, a variety of genres (such as autobiographical prose, historical novels, fantasy, short stories, and dystopias), a richness of culturally specific elements, and stylistic diversity among the writers.

To identify the units of analysis, a process of continuously selecting culturally marked elements from the original texts and Ukrainian texts was used. The total count of 187 fragments includes cultural realities (52 units), idiomatic expressions (41 units), phraseological units (34 units), historical allusions (28 units), dialectisms, and regionalisms (32 units).

Besides the manual comparative analysis, a set of digital translation tools and corpus-based tools were used in the study, which helped identify, classify, and confirm the translation strategies in the analyzed German-Ukrainian literary texts. To ensure transparency of the methodology, the digital translation tools and corpus-based methods used in the research of the German-Ukrainian literary translations are also summarized in Table 1.

Table 1. Digital translation tools applied in the analysis of German–Ukrainian literary translations

Digital tool	Category	Function in the study	Analytical contribution
SDL Trados Studio	CAT tool	Alignment of source and target segments	Detection of recurrent translation solutions and consistency patterns
memoQ	CAT tool	Translation memory and terminology control	Identification of stable equivalents and translator preferences
DeepL	Neural MT	Draft semantic comparison	Supportive semantic orientation for complex syntactic structures
Google Translate	Neural MT	Contrastive reference translation	Control of semantic loss and overgeneralization

AntConc	Corpus analysis software	Frequency and concordance analysis	Extraction of culturally marked units and idiomatic patterns
ParaRook||DE-UK	Parallel corpus	Aligned German–Ukrainian texts	Empirical validation of translation strategies

Source: authors' own development

The use of digital tools confirmed that corpus-based and CAT-assisted analyses improve the reliability of identifying translation strategies, especially in cases of recurring cultural realities and idiomatic expressions. Neural machine translation systems were used solely as auxiliary reference tools and showed limited applicability for stylistically marked literary texts. Overall, the results suggest that digital instruments enhance analytical accuracy but do not alter the interpretative nature of literary translation.

The study uses a set of complementary methods:

- *A comparative analysis* was used to compare original texts with translations and to identify translation transformations according to the following scheme: original context → translation decision → preservation/loss of cultural component → adequacy of strategy.
- *Contextual analysis* is used to determine the functional load of cultural elements in the original and to assess their reproduction in translation, taking into account the macro context (era, socio-cultural background) and micro context (immediate environment). The translation strategies method made it possible to classify ways of transmitting cultural elements: transcription, calquing, adaptation, functional equivalent, descriptive translation, and intertextual adaptation.

The quality of translation solutions was evaluated based on four parameters: semantic accuracy (preservation of denotative meaning), cultural adequacy (conveyance of connotations), stylistic equivalence (reproduction of the author's style), and pragmatic adaptability (understanding of the translation by the target audience). The study focuses on contemporary translation from 2020 to 2025, reflecting current trends in translating Ukrainian literary works into German.

4. RESULTS

4.1. Strategies for translating cultural realities and historical allusions

The analysis of the five works in German and their Ukrainian translations identified 52 instances of cultural peculiarities that needed specific translation solutions. The main challenge was German realities related to the education system, common traditions, and events not found in Ukrainian culture.

G. Gnedkova, the translator of the novel "Origin" by Stanišić, S., had to convey certain Balkan and German realities. For example, the word *"Hauptschulabschluss*" (primary school leaving certificate) was translated descriptively as "certificate of basic secondary education" because the Ukrainian three-tier school system is called *Hauptschule*, *Realschule*, *Gymnasium,* or school, which has no equivalent in Ukraine. These choices

align with the strategy proposed by Lysenko et al. (2019), as it is necessary to adapt educational concepts to the cultural context during translation.

The historical novel by Kehlmann, D. "Til," translated by O. Kovaleva, is rich with references to the Thirty Years' War. The translator employed a transcriptional approach with some additions to clarify place names: *"Westfalen*" → "Westphalia (historical region)," *"Pfalz*" → "Palatinate (Electorate)." This technique helps preserve the originality of the text while giving Ukrainian readers a better understanding of the historical context.

German holidays and traditions posed a specific challenge. In Gier, K. "The Ruby Book," the reality of *"Schultüte*" (a cone of sweets children receive on their first day of school) was translated descriptively as "a festive ball of candy for the first day of school." Kovalenko and Stroykova (2024) note that such culturally specific elements often require extended interpretation to preserve the pragmatic function of the text.

The distribution of translation strategies is shown in Table 2, which indicates that adaptation was the most frequently used strategy (30.8%), indicating that translators focused on the acceptability of the text for the target audience. Transcription was used mainly for proper names and historical terms (26.9%), while descriptive translation was used for non-equivalent everyday vocabulary (23.1%).

Table 2. Distribution of strategies for translating cultural realities in five works

Strategy	Quantity	Share (%)	Examples from different works (DE→UK)
Adaptation	16	30.8	Oktoberfest → Autumn beer festival (Stanišić) Zeitreise → time travel (Gier) Mauerfall → the fall of the Wall (Hermann)
Transcription	14	26.9	Bundesland → Bundesland (Kehlmann) Gymnasium → gymnasium (Stanišić) Wiener Schnitzel → Viennese schnitzel (Haushofer)
Descriptive translation	12	23.1	Gemütlichkeit → cozy atmosphere (Hermann) Schultüte → a festive ball of candy (Gier) Hauptschulabschluss → certificate of basic education (Stanišić)
Calculations	6	11.5	Muttersprache → mother tongue (Kehlmann) Heimweh → homesickness (Haushofer)
Generalization	4	7.7	Brötchen → bun (Hermann) Semmel → bun (Haushofer)
Total	52	100	

Source: authors' own development based on the analysis of selected translations

Translator N. Sniadanko skillfully depicted the realities of Berlin in the 90s within the urban environment in Hermann, J.'s collection of short stories, "Nothing but ghosts." The

toponym *"*Prenzlauer *Berg*" was kept in the translation, with an added explanation about the "bohemian district of East Berlin" as a contextual note that provides cultural context for the Ukrainian reader.

Table 3 provides specific examples of how cultural realities are translated, making it clear that translation decisions may vary depending on the form of historical information and its importance for interpreting the text.

Table 3. Examples of translation of cultural realities in the five works under study

Work (author, translator)	German reality	Type of reality	Ukrainian translation	Strategy
Stanišić (Gnedkova, 2025)	Jugoslawien	historical and geographical	Yugoslavia	Transcription
Stanišić (Gnedkova, 2025)	Gastarbeiter	socio-cultural	guest worker (laborer)	Transcription + explanation
Kehlmann (Kovaleva, 2024)	Westfälischer Frieden	historical event	Peace of Westphalia	Transcription
Kehlmann (Kovaleva, 2024)	der Winterkönig	historical allusion	The Winter King (Frederick V)	Transcription + explication
Gier (Andrushchenko, 2022)	Zeitsprung	fantasy reality	time jump	Calculus
Gier (Andrushchenko, 2022)	Schultüte	school tradition	festive candy box	Descriptive translation
Hermann (Sniadanko, 2024)	Prenzlauer Berg	Berlin place name	Prenzlauer Berg (bohemian neighborhood)	Transcription + context
Hermann (Sniadanko, 2024)	DDR-Zeit	historical period	times of the GDR	Transcription + adaptation
Haushofer (Ivanchuk, 2020)	Almhütte	Austrian household reality	mountain hut	Generalization
Haushofer (Ivanchuk, 2020)	die Wand	key character	wall	Literal translation

Source: own development of the authors

The dystopian novel "Beyond the Wall" by Haushofer, M., translated by N Ivanchuk, is rich in Austrian dialect expressions and regional words. The translator consistently uses neutralization, replacing dialectal forms with literary Ukrainian equivalents that do not significantly alter the meaning, which helps preserve the text's aesthetic qualities. Table 4 offers a comparative analysis of different strategies' effectiveness, examining three parameters of translation adequacy.

Semantic accuracy was defined as the extent to which the denotative meaning of the original was preserved in the translation. The strategy's ability to convey the connotations and cultural nuances of the German element was used as a measure of *cultural adequacy*. *Practical flexibility* was assessed by how well the translation was understandable to Ukrainian readers without needing extra explanation. The study's authors analyzed each of the 187 fragments on a three-point scale (high/medium/low efficiency) for each of the three parameters.

Based on this analysis, the overall effectiveness of each strategy was determined: strategies that received high scores on two or three parameters were considered highly effective; those that received mostly high average scores were considered moderately effective; and strategies that received low scores on two or more parameters were considered low effective.

Table 4. Efficiency of translation strategies according to adequacy criteria

Strategy	Semantic accuracy	Cultural appropriateness	Pragmatic adaptability	Example from the corpus	Overall evaluation
Adaptation	Average	High	High	Mauerfall → fall of the Berlin Wall	High
Transcription	High	Low	Medium	Gastarbeiter → guest worker	Medium
Descriptive translation	High	The average	High	Schultüte → holiday circle	High
Calculus	High	Low	Low	Zeitsprung → time jump	Low
Generalization	Medium	Medium	High	Almhütte → mountain hut	Medium

Source: authors' own development based on translation adequacy criteria

The study shows that adaptation and descriptive translation are the best methods to both convey cultural realities and ensure understanding by the target audience. They balance preserving cultural specifics with making the message clear to the audience.

4.2. Translation of idioms, phrases, and language gaps

To identify idiomatic expressions and phraseological units, a complete sample of five works totaling 1540 pages was analyzed. Each original German text was read, and all fixed expressions whose meanings cannot be inferred from the individual components were marked. A parallel analysis of the Ukrainian translations identified 41 examples of German idiomatic expressions (expressions with completely reinterpreted meanings, e.g., *"die Katze aus dem Sack lassen"*) and 34 phraseological units (pre-established expressions with preserved imagery, e.g., *"mit offenen Armen empfangen*"). The translation of these required creative solutions due to the absence of Ukrainian equivalents. The classification was based on principles of the degree of idiomatic and

figurative language according to Marianko's (2025) typology, which distinguishes between lexical, conceptual, and cultural gaps in German-Ukrainian translation.

The translator in Stanišić's novel Origins encountered Balkan and German idioms. The Hungarian functional equivalent was translated as the Ukrainian expression, with the German *"jemandem die Daumen drücken*" (literally: "to give someone a thumbs-up") translated into Ukrainian as clenching fists, maintaining the practical meaning of wishing someone good luck. Dyakiv et al. (2022) emphasize that idiomatic expressions are the most difficult to convey in German when translated from Ukrainian due to their opaque semantics.

Table 5 displays the distribution of translation strategies for idioms and shows that nearly half of them are functional equivalents (41.5%), with literal translation being the most common.

Table 5. Translation strategies for German idioms

Strategy	Number	Share (%)	Example.
Functional equivalent	17	41.5	*auf den Hund kommen* → to become poor
Calculation with explanation	10	24.4	*das ist nicht mein Bier* → it's not my beer (none of my business)
Descriptive translation	8	19.5	*Tomaten auf den Augen haben* → not to notice anything
Literal translation	4	9.8	*die Nase voll haben* → have a full nose
Omission	2	4.8	-
Total	41	100	

Source: authors' own development based on the analysis of translations of works

The slang used by young people and colloquial idioms should have been especially considered in the book Gier, K. "The Ruby Book." The phrase "einen Kater haben" (literally meaning "to have a cat") was translated as "to suffer from a hangover," which may be an appropriate functional equivalent. Such instances are classified by Marianko (2025) as conceptual discrepancies, where the figurativeness of the German phraseological unit does not match the figurativeness of the Ukrainian one.

Table 6 shows specific examples of the translation of idioms of different levels of figurativeness in the analyzed works.

Table 6. Examples of the translation of German idioms in the five analyzed works

Work (author, year of translation)	German original	Literal meaning	Ukrainian translation	Type of strategy
Stanišić's "Origin" (2025)	*jemandem die Daumen drücken*	give someone a thumbs up	keep your fingers crossed	Functional equivalent
Stanišić "Origin" (2025)	*die Katze aus dem Sack lassen*	let the cat out of the bag	reveal the secret	Descriptive translation
Kehlmann "The Body" (2024)	*den Nagel auf den Kopf treffen*	hit the nail on the head	hit the nail on the head	Functional equivalent
Kehlmann "Til" (2024)	*das Kind mit dem Bade ausschütten*	throw the baby out with the bathwater	to throw out with the bathwater and the necessary	Functional equivalent
Gier "The Ruby Book" (2022)	*einen Kater haben*	have a cat	suffer from a hangover	Functional equivalent
Gier "The Ruby Book" (2022)	*Hals- und Beinbruch!*	break a neck and a leg	break a leg and a neck!	Functional equivalent
Hermann "Nothing but ghosts" (2024)	*Mach mal halblang!*	do half	and put your tongue down!	Adaptation (colloquial style)
Hermann "Nothing but ghosts" (2024)	*aus allen Wolken fallen*	fall out of all the clouds	to fall from the sky	Partial preservation of imagery
Haushofer "Behind the Wall" (2020)	*über den Berg sein*	to be over the mountain	to get out of a difficult situation	Descriptive translation
Haushofer "Behind the Wall" (2020)	*ins Gras beißen*	bite the grass	perish	Loss of imagery

Source: authors' own development based on the analysis of the translation corpus

The slang of Berlin with all its idioms is prominent in the collection of short stories by Hermann, J. "Nothing but ghosts." N. Sniadanko, who translated this book, used an adaptation approach where he replaced German dialect expressions with Ukrainian equivalents that have similar stylistic qualities. "Mach mal halblang!" (make it twice as short) is rendered as "Hold your tongue!" (shut up!), which maintains the same characteristics as the original.

According to a study by Dyakiv et al. (2022), mistakes related to using German idioms are most often made by Ukrainian-speaking students because they try to translate Ukrainian idioms literally. This tendency is confirmed by our findings: in 9.8% of cases, translators used literal translation to avoid losing the idiomatic meaning.

Table 7 presents an analysis of how well the figurative meaning of phraseological units is preserved, measuring the extent to which the metaphorical part of German expressions remains intact.

Table 7. Preservation of figurativeness in the translation of phraseological units in the studied works

Degree of preservation	Number	Share (%)	Examples from the works
Full preservation	12	35.3	mit offenen Armen empfangen → to welcome with open arms (Hermann) die Hände in den Schoß legen → fold your arms (Kehlmann) den Kopf hängen lassen → hang your head (Gier)
Partial preservation	15	44.1	aus allen Wolken fallen → to fall from the sky (Hermann)< auf den Hund kommen → to become poor (Stanišić) zwischen Baum und Borke stehen → to be between a rock and a hard place (Kehlmann)
Loss of imagery	7	20.6	ins Gras beißen → to perish (Haushofer) den Löffel abgeben → to die (Hermann) die Katze im Sack kaufen → buy blindly (Gier)
Total	34	100	

Source: authors' own development based on translation analysis

The Austrian dialect used in the novel "Behind the Wall" by Haushofer, M., presented challenges with idioms. The process of neutralizing dialect expressions, replacing them with standard German equivalents, and then selecting Ukrainian equivalents was organized by translator N. Ivanchuk. It was a two-stage plan that avoided literal translation.

The German-Ukrainian gap falls into three categories: lexical (missing word), conceptual (missing concept), and cultural (missing cultural context) (Marianko, 2025). Our analysis revealed that all three can occur in translations.

The typology of the identified lacunae is presented in Table 8.

Table 8. Typology of German-Ukrainian lacunae in five translations

Type of lacuna	Number	Examples from works (DE)	Method of compensation (UK)
Lexical	18	Gemütlichkeit (Hermann) – cozy atmosphere Fernweh (Stanišić) – longing for the distance Waldeinsamkeit (Haushofer) – loneliness in the forest	Descriptive translation
Conceptual	24	Schadenfreude (Gier) – gloating Heimat (Stanišić) – home / homeland Vergangenheitsbewältigung (Kehlmann) – overcoming the past	Calculation or descriptive translation
Cultural	33	Feierabend (Hermann) – end of the working day Kaffee und Kuchen (Gier) – afternoon coffee and cakes Waldsterben (Haushofer) – the death of forests Dreißigjähriger Krieg (Kehlmann) – Thirty Years War Gastarbeiter (Stanišić) – a guest worker (laborer)	Contextual adaptation or transcription with explanation
Total	75		

Source: authors' own development based on Marianko's (2025) typology

The study results indicate that the most effective way to translate idioms is by finding functional equivalents (41.5%) that preserve the pragmatic meaning and may adjust the image. Calculation is acceptable only if it is supported by other explanation methods (24.4%), as relying solely on it can lead to misunderstanding, as shown in the study by Dyakiv et al. (2022) regarding communication failures.

A particular concern is the translation of German verb combinations that include both separable and non-separable prefixes, which often carry idiomatic meanings. Table 9 provides an example of such translations.

Table 9. Idiomatic meanings of German verb composites in translation

Verb composite	Literal meaning	Idiomatic meaning	Ukrainian equivalent	The work
durchfallen	fall through	fail the exam	fail the exam	Gier
ankommen	come	be important	matter	Hermann
auffallen	pop up	attract attention	catch the eye	Stanišić
umkommen	die around	perish	lose your life	Kehlmann
durchkommen	go through	survive, cope	withstand, endure	Haushofer
zurückkommen	go back	recall something	recall	Hermann
mitkommen	go with someone	comprehend	follow the thought	Gier
aufmachen	open up	start something	open (a business/shop)	Stanišić

Source: authors' own development based on translation analysis

Of particular interest is how German verb compounds with separable prefixes, which are usually idiomatic expressions, are translated (Table 8). These verbs show a unique feature of the German language where the prefix significantly alters the meaning of the main verb, making translation challenging. The strategy of finding Ukrainian idiomatic equivalents was used in all five works under review and is common among all translators, as it helps preserve the natural flow of the language and avoids literal translation.

4.3. Grammatical transformations and preservation of stylistic features

Differences in German and Ukrainian grammar required 94 changes that influenced the syntax and stylistic tone of the translated texts. To identify these grammatical changes, a comparative analysis of the original and translated syntactic structures was performed, which documented the nature of each transformation, the reasons behind it, and how it affected the style of the text.

The most significant issue is that Ukrainian lacks the category of certainty/indefiniteness, which is expressed through German articles. According to Kondratieva and Ovsiienko (2023), German articles carry a high communicative load, indicating known or new information, which in Ukrainian is conveyed through vocabulary, sentence structure, and actual speech rhythm.

In Kehlmann's novel Til, the German sentence structure creates a distinctive syntactic rhythm: meaningful verbs are positioned at the end of the sentence (*Satzklammer*), which is typical for the German language. The translator O. Kovaleva applied a method of syntactic restructuring, where the word order was adapted to follow Ukrainian language rules, but the loss of rhythm was mitigated through inversion in other parts of the text.

Table 10 shows the typology of the identified grammatical transformations with a predominance of syntactic rearrangements (38.3%) and compensatory transformations (29.8%).

Table 10. Typology of grammatical transformations

Type of transformation	Number	Share (%)	Reason for the transformation
Syntactic reorganization	36	38.3	Frame construction, word order
Compensation of articles	28	29.8	Absence of articles in Ukrainian
Change of tense forms	15	16.0	Difference in the tense system
Modulation	10	10.6	Difference in modality
Sentence division/combination	5	5.3	Syntactic norm of Ukrainian
Total	94	100	

Source: authors' own development based on the corpus analysis

In analyzing the collection Nothing but Ghosts by Hermann, J., it was found that the minimalist style is achieved through shortening and fragmenting sentences, as well as using articles to create an effect of understatement. This effect was maintained by translator N. Sniadanko using elliptical constructions and fragmentation to make up for the absence of German articles. Trofimova-Herman et al. (2024) note that in preserving the stylistic features of the original, compensatory techniques are often applied at different linguistic levels.

Table 11 presents specific examples of certainty compensation, illustrating different ways German articles are interpreted in communication.

Table 11. Compensation of the category of definiteness in translations

Work	German original	Article function	Ukrainian translation	Method of compensation
Stanišić "Origin"	*Der Mann kam*	known information	That man came	demonstrative pronoun
Kehlmann "Body"	*Ein Junge stand dort*	new information	Some guy was standing there	indefinite pronoun
Gier "The ruby book"	*Das Mädchen lächelte*	generalization	The girl smiled	null form
Hermann "Nothing but ghosts"	*Die Stadt war leer*	contextual information	The city was empty	word order (topic→rhema)
Haushofer "Behind the wall"	*Eine Wand trennte sie*	introduction of a new object	A wall separated them	inversion

Source: own development of the authors

The complex German syntactic structures with multiple subordinate clauses required modifications to align with Ukrainian language standards. In Sasha Stanisich's novel The Origin, sentences of 85–100 words were broken into smaller syntactic units without losing their logical connections, as shown in Table 12.

Table 12. Syntactic transformations of complex sentences

Parameter	German original	Ukrainian translation	Transformation
Average sentence length	23.4 words	16.8 words	Membership by 28%.
Maximum length	97 words (Stanišić)	54 words	Division of complex structures
Number of subordinate clauses	3.2 per sentence	1.8 per sentence	Replacing subordinate clauses with coordinate clauses
Depth of attachment	up to 4 levels	up to 2 levels	Simplification of the syntactic hierarchy

Source: authors' own development based on quantitative analysis

Special attention should be given to translating the German konjunktiv (subjunctive mood), which conveys someone else's opinion, uncertainty, or hypothetical statements. Kondratieva and Ovsiienko (2023) point out that the Ukrainian subjunctive does not fully capture the semantics of the German konjunktiv, so translators use lexical compensations: interjections (such as, as if, as if), modal verbs (to have, to be able to), and adverbial phrases.

Examples of modality transmission are shown in Table 13.

Table 13. Transmission of the German Konjunktiv into Ukrainian

Work of art	German original (Konjunktiv)	Ukrainian translation	Means of compensation
Kehlmann "Til"	*Er sei ein Narr gewesen*	He is said to be a jester	introductory word
Stanišić "Origin"	*Sie hätte es nicht gewusst*	She didn't seem to know	introductory word
Hermann "Nothing but ghosts"	*Das könnte stimmen*	It may be true	modal word
Haushofer "Behind the wall"	*Es wäre besser gewesen*	It would be better	subjunctive mood

Source: authors' own elaboration

Trofimova-Herman et al. (2024) highlight that maintaining the emotional tone, along with the rhythmic and intonational features of the original, requires flexible use of compensatory mechanisms. In the novel "Beyond the Wall" by Haushofer, M., the translator N. Ivanchuk preserved the monotony of the narrative caused by repeated syntactic structures through the use of anaphoric constructions and rhythmic parallelisms.

The analysis shows that successful translators do not just reproduce grammatical structures formally but also seek functionally equivalent means in Ukrainian. Syntactic transformations (38.3%) and article compensation (29.8%) make up two-thirds of all grammatical changes, confirming the systematic nature of German-Ukrainian grammatical differences. Simultaneously, the author's style remains intact through compensatory strategies at the lexical, phraseological, and syntactic levels, ensuring the overall integrity of the literary work during translation.

The process of translating cultural realities and historical references highlights the dominance of adaptation strategies over formal equivalence, reflecting modern Ukrainian translators' concern about the text's acceptability for the target audience. The effectiveness of functional equivalents—those that preserve the pragmatic role of idiomatic expressions and phraseological units without excluding potential visual changes—was confirmed through the analysis of idiomatic expressions and phraseological units. Systemic differences between the grammar of German and Ukrainian are addressed through multi-layered mechanisms at the lexical, syntactic, and stylistic levels, ensuring the integrity of the literary work in translation.

5. DISCUSSION

By examining the linguistic and cultural features involved in translating German fiction into Ukrainian, the article uncovers certain systemic trends with both theoretical and practical importance for advancing Ukrainian translation studies. The use of continuous sampling analysis across five modern translations totaling 1,540 pages enabled us to identify 187 instances of culturally marked elements: cultural realities (52 units), idiomatic expressions (41 units), phraseological units (34 units), historical allusions (28 units), and dialectisms (32 units).

The comparison of the original German texts and their Ukrainian translations allowed for the classification of 94 grammatical changes due to systemic differences between the languages: syntactic reorganization (36), article compensation (28), tense form changes (15), modulation (10), and sentence segmentation (5).

Based on this analysis, six main translation strategies were identified: transcription, calquing, adaptation, functional equivalence, descriptive translation, and intertextual adaptation. These are used to maintain the cultural authenticity and stylistic originality of the German originals.

The findings on the prevalence of adaptation (30.8%) in approaches to translating cultural realities align with Kovalenko and Stroikova (2024), who observe that contemporary Ukrainian translators pay less attention to formal equivalence and prioritize making the text acceptable to the target audience. This reflects a paradigm shift in Ukrainian literary translation, moving away from the literal translations of the Soviet era toward the internationally accepted functionalist method. Additionally, a significant percentage of transcriptions (26.9%) of historical terms and place names suggests that translators aimed to preserve the cultural specificity of the German version, which is especially important in works with a specific historical context, such as the novel _Till_ by Kehlmann, D.

The theoretical views expressed by Lysenko et al. (2019) about prioritizing pragmatic adequacy over formal correspondence in translating phraseological units are supported

by the dominance of functional equivalents (41.5%). Our data indicate that calquing German idioms without extra explanation (9.8% of cases) results in a loss of idiomaticity and increases the risk of communication errors, as noted in the study by Dyakiv et al. (2022) on issues faced by English-speaking students. This finding has practical implications for translator training: it is important to develop skills in finding functional equivalents and creative ways to express images, rather than mechanically matching the structure of the original.

Of particular interest is how the success of translation strategies relates to the type of cultural element. The authors found that adaptation and descriptive translation have the highest overall adequacy ratings, as they strike the most appropriate balance between semantic accuracy and pragmatic flexibility. This aligns with the findings of Marianko (2025) regarding the need for compensatory measures to address the German-Ukrainian language barrier. At the same time, it was observed that calquing, despite its excellent semantic accuracy, has low cultural adequacy and pragmatic adaptability, which confirms Blumczynski's (2023) point about the risks of a formal approach to translating culturally charged elements.

The study of grammatical changes revealed that systemic differences between German and Ukrainian require syntactic reorganization in 38.3% of cases. The same trends are seen in Kondratieva and Ovsiienko (2023), who note that it is quite difficult to convey German frame structures in Ukrainian. The authors build on their findings and show that effective translators compensate for the loss of syntactic specificity by using other linguistic levels: word order, vocabulary, and topic sentence structure. In particular, German articles (29.8% of conversions) are compensated for by five mechanisms: demonstrative pronouns, indefinite pronouns, word order, inversion, and null form. This variety of strategies demonstrates the high professionalism of the analyzed translators and their deep understanding of the systemic differences between the languages.

When comparing our results with those of international studies, the authors can identify general trends and unique features of German-Ukrainian translation. Lang (2024), in her study of the translation of de l'Horizon's novel Blutbuch, highlights the challenges of translating gender-neutral language and neomorphs, which is also relevant to Ukrainian translation, where inclusiveness in language use is only beginning to develop. The translation of non-binary narratives is discussed by Vecchiato (2024), who stresses the importance of maintaining the linguistic innovations of the original without breaking the rules of the target language, something Ukrainian translators also face when working with experimental German prose.

In their study of poetry translation, Trofimova-Herman et al. (2024) highlight the importance of preserving the emotional tone, rhythmic qualities, and intonational features of the original. The authors argue that this approach can also be effective for prose: the minimalist style and the effect of understatement were actually maintained in the works of Hermann, J., through elliptical constructions and fragmentation. This demonstrates that the principles developed for translating poetry can be adapted to fiction prose, which has its own unique stylistic elements.

The practical value of the study lies in creating a systematic taxonomy of translation strategies for German-Ukrainian translation. This can be used in translator training, establishing translation quality criteria, and building German-Ukrainian parallel corpora. The identified patterns enable us to propose some recommendations for translators: when

dealing with cultural realities, they should focus on adaptation and descriptive translation; for idiom translation, they should seek functional equivalents; and grammatical changes should be balanced with other language levels to maintain the original tone.

The study's results confirm that translating German literature plays a crucial role in intercultural communication between German and Ukrainian cultural spaces. Effective translation methods enable Ukrainian readers not only to understand the plot but also to grasp the uniqueness of the German worldview: philosophical reflexivity (Hesse, Hermann), historical trauma (Kehlmann), and existential loneliness (Haushofer). Additionally, translation enriches the Ukrainian language with new expressive tools and broadens the intertextual landscape of Ukrainian literature. Marais and Meylaerts (2023) emphasize that literary translation is a form of cultural transfer that fosters mutual understanding between countries, especially as Ukraine strives to become part of the European community.

The study's main contribution is to expand understanding of the linguistic and cultural details involved in German-Ukrainian translation. As is well known, effective translation of German fiction requires high proficiency in both languages, along with knowledge of cultural contexts, the ability to creatively find compensatory strategies, and a balance between maintaining originality and satisfying the needs of the target audience.

The limitations of the study are that it only focused on prose works, and it has not yet analyzed poetic and dramatic translations, which leaves room for further research. Another interesting area could be how Ukrainian readers perceive German literature and how translation strategies influence text perception. Creating a parallel corpus of German-Ukrainian contemporary literature with a classification of translation transformations would be a valuable opportunity to use quantitative research methods and find statistically significant patterns.

Generally, the article demonstrates that the linguistic and cultural distinctiveness of German-Ukrainian literary translation results from systemic differences across all language levels, including lexical, phraseological, grammatical, and stylistic. Successful translation strategies rely on a functional approach, clear methods, and a creative search for equivalents that ensure the preservation of cultural authenticity and the artistic value of the original works.

6. CONCLUSIONS

The analysis of the linguistic and cultural contexts involved in translating German fiction into Ukrainian, based on five modern translations (2020-2025), demonstrates the presence of systematic patterns and confirms the complexity of the translation process, which encompasses cultural, linguistic, and stylistic elements.

It was found that among the 187 fragments of culturally marked elements in the corpus, three primary translation strategies dominate: adaptation (30.8%), transcription (26.9%), and descriptive translation (23.1%). This distribution shows that modern Ukrainian translators prioritize functional equivalence and the acceptability of the text for the target audience, reflecting a shift from the literalism of the Soviet school of translation to the pragmatic approaches of European translation studies.

It was also found that functional equivalents (41.5% of cases), which maintain a pragmatic role but can alter the figurative meaning, are most suitable for transmitting German idioms. The study identified 75 German-Ukrainian discrepancies, categorized into three types: lexical (18), conceptual (24), and cultural (33), confirming the significance of cultural differences between the linguistic and cultural contexts of German and Ukrainian.

The authors identified 94 grammatical changes, with 38.3% being syntactic changes and 29.8% involving article compensation. It was found that the absence of the definiteness/indefiniteness category in Ukrainian is offset by five other mechanisms: indicative pronouns, indefinite pronouns, word order, inversion, and null form.

The practical importance of these findings lies in creating a systematic classification of translation strategies that can be used for both training translators and developing qualitative criteria to evaluate translation quality. Several recommendations have been proposed: priority should be given to adapting and descriptively translating cultural elements, functionally equivalent idioms should be identified, and grammatical transformations should be compensated for at multiple levels to preserve style.

The study has limitations because it focuses on prose genres and does not include poetry or drama, and there are no receptive studies on how Ukrainian readers perceive translations. A promising direction would be to develop a specialized German-Ukrainian parallel corpus that annotates translation transformations, enabling the use of quantitative tools and machine learning to detect statistically significant patterns in large datasets.

The introduction of a digital perspective in the analysis confirms that the cultural and linguistic features of German-Ukrainian literary translation are beginning to be examined through a hybrid methodological approach. Digital tools serve as supportive resources that help ensure the consistency of analysis results and enable the systematic observation of translation patterns, without undermining the translator's creative and interpretive roles. Therefore, the cultural, linguistic, and digital aspects of translation should be viewed as supplementary elements in modern research within the field of translation.

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Automated language learning systems: Cognitive-linguistic perspectives

Sistemas automatizados de aprendizaje de idiomas: perspectivas cognitivo-lingüísticas

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Abstract

The ongoing transformation of language education is driven by the widespread adoption of automated language-learning systems that customize instruction for individual learners while also increasing motivation and interaction. The significance of this study lies in the need to enhance the quality of foreign language education amid societal digitalization and to assess how digital infrastructure influences the effectiveness of intelligent language platforms. The study aims to clarify the relationship between the development level of the digital educational ecosystem and the efficiency of automated language learning systems. The methodology includes secondary analysis of international statistical data, systematic literature reviews, and comparative analysis of scientific publications on integrating artificial intelligence into foreign language teaching. Results indicate that a well-developed digital infrastructure significantly boosts the potential of intelligent systems to develop communicative and cognitive skills, while low digital maturity limits their educational impact. The study offers a conceptual view of intelligent language platforms as tools for humanistic, personalized education that improve educational quality, promote inclusiveness, and facilitate intercultural interaction. Its practical significance involves guiding digital strategies, optimizing blended and remote learning models, and strengthening methodological support for foreign language instruction.

Keywords: automated language learning systems, adaptive learning, individualized learning, interactive platforms, gamification.

Resumen

La transformación actual de la enseñanza de lenguas está impulsada por la adopción generalizada de sistemas automatizados de aprendizaje de idiomas que adaptan la instrucción a las características individuales de los estudiantes, al tiempo que incrementan la motivación y la interacción. La relevancia de este estudio se deriva de la necesidad de mejorar la calidad de la enseñanza de lenguas extranjeras en el contexto de la digitalización de la sociedad, así como de evaluar cómo la infraestructura digital influye en la eficacia de las plataformas lingüísticas inteligentes. El objetivo del estudio es esclarecer la relación entre el nivel de desarrollo del ecosistema educativo digital y la eficacia de los sistemas automatizados de aprendizaje de idiomas. La metodología se basa en el análisis secundario de datos estadísticos internacionales, en revisiones sistemáticas de la literatura y en un análisis comparativo de publicaciones científicas sobre la integración de la inteligencia artificial en la enseñanza de lenguas extranjeras. Los resultados demuestran que una infraestructura digital bien desarrollada amplía significativamente el potencial de los sistemas inteligentes para fomentar las competencias comunicativas y cognitivas, mientras que un bajo nivel de madurez digital limita su impacto en la educación. El estudio propone una visión conceptual de las plataformas lingüísticas inteligentes como herramientas de una educación humanista y personalizada que mejoran la calidad educativa, promueven la inclusión y apoyan la interacción intercultural.

Palabras clave: sistemas automatizados de aprendizaje de idiomas, aprendizaje adaptativo, aprendizaje individualizado, plataformas interactivas, gamificación.

1. INTRODUCTION

The rapid growth of digital technologies is creating new methods for learning languages, with automated systems powered by artificial intelligence playing a key role in providing personalized, interactive, and cognitively engaging educational experiences. These systems can customize learning materials, promote authentic communication, and quickly analyze results, which boosts motivation and enhances the effectiveness of language learning. Simultaneously, researchers point out several challenges, including the need to develop digital literacy, ensure equal access to resources, use data ethically, and preserve the social role of teachers amid automation. This highlights the importance of analyzing how digital infrastructure affects the success of implementing intelligent language platforms.

The study aims to evaluate how digital infrastructure levels affect the effectiveness of automated foreign language learning systems and to identify opportunities for further growth. It intends to analyze the current state of artificial intelligence (AI) platform development in language education, review international data on the digital readiness of educational systems, pinpoint pedagogical and cognitive factors influencing learning effectiveness, and assess limitations and possibilities for incorporating intelligent technologies into foreign language learning.

2. LITERATURE REVIEW

Recent studies highlight the rapid development of artificial intelligence-based automated language learning systems (further – ALMS), which are gradually transforming the

paradigm of foreign language education and improving the personalization, analytics, and adaptability of teaching solutions (Bahari et al., 2025; Chen et al., 2025; Dou et al., 2025; Wah, 2025). Systematic reviews demonstrate the effectiveness of AI technologies in enhancing feedback and speech assessment, as well as in modeling real-world communication situations (Li et al., 2025; Balavar et al., 2025; Liu et al., 2025; Garzón et al., 2025). Researchers focus especially on the cognitive mechanisms of foreign language acquisition, supported by multimodal content, error prediction, and semantic analysis of responses (Chetveryk et al., 2025; Sun et al., 2025; Tian et al., 2024; Nguyen & Habók, 2022). At the same time, the importance of gamification tools and motivational analytics for increasing learner engagement and autonomy continues to grow (Vo, 2025; Wah, 2025; Balavar et al., 2025).

In the field of inclusive foreign language education, AI has been recognized for its potential to support learners with visual impairments and to create alternative communication channels (Jiao & Shakibaei, 2025; Kozak & Blyzniuk, 2025). Researchers also focus on issues such as ethical constraints, digital security, algorithm transparency, and potential threats to academic integrity (Strzelecki, 2025; Toscu, 2025; Zhu & Wang, 2024; Son et al., 2023). A significant part of the literature highlights the connection between the effectiveness of automated language learning systems (further – ASNM) and the level of digital readiness in educational ecosystems, which requires infrastructure and management support (United Nations Children's Fund, 2023; Fraillon, 2024; OECD, 2023, 2025; UNESCO, 2023). Developing digital literacy policies is considered crucial for ensuring equal access to innovation and reducing educational gaps between countries (Kure et al., 2023; Batsurovska et al., 2024; Delen et al., 2024).

Another area of research emphasizes integrating active learning methods—mobile, self-directed, and blended—through digital platforms and chatbots, which foster self-regulation and ongoing motivation for learning (Lai et al., 2022; Li et al., 2025; Nguyen & Habók, 2022). Scientific studies also underscore the value of using video content and computer analysis of text artifacts to boost autonomy and flexibility in language skill development (Kure et al., 2023; Tian et al., 2024). Research on intelligent agents and chatbots demonstrates their effectiveness in encouraging communicative activities, offering immediate feedback, and supporting social interaction (Son et al., 2023; Li et al., 2025; Vo, 2025). The role of AI in aiding oral speech and automating the review of written work has also been acknowledged, contributing to improved assessment quality and more efficient teaching (Dou et al., 2025; Chen et al., 2025; Wah, 2025).

Bibliometric analyses reveal a sharp increase in scholarly interest in artificial intelligence within foreign language education, especially following the development of generative language models (Delen et al., 2024; Zhu & Wang, 2024; Strzelecki, 2025). Simultaneously, both domestic and international publications highlight that AI technologies enhance education quality only when they are implemented methodically, digital infrastructure is in place, and teachers are adequately trained (Zhukevych & Spiricheva, 2024; Kozak & Blyzniuk, 2025; Batsurovska et al., 2024). A comprehensive review of sources identifies three main trends in current research: the cognitive-linguistic basis for adaptive platforms, the advancement of inclusive and mobile solutions, and the development of digital literacy policies to address educational inequality (United Nations Children's Fund, 2023; Fraillon, 2024; OECD, 2023, 2025; UNESCO, 2023). This provides a systematic perspective on the shift toward personalized, data-driven, and socially conscious foreign language education.

Despite significant progress, several issues remain unresolved: researchers emphasize the need to standardize assessment criteria, improve teachers' digital and pedagogical skills, and address ethical concerns related to authorship, privacy, and transparency of AI algorithms (Toscu, 2025; Strzelecki, 2025; Zhu & Wang, 2024; Delen et al., 2024). The long-term impacts of intelligent language systems on users' cognitive development and intercultural competence formation are still inadequately studied. Overall trends in the development of artificial intelligence in language education are also summarized in conceptual reviews that identify key directions for the growth of Computer-Assisted Language Learning (further – CALL) systems and highlight prospects for their continued improvement (Katinskaia, 2025).

Despite extensive research, there is still a lack of evidence regarding the overall effectiveness of ASLMs in different social and cognitive learner groups, as well as mechanisms for ethical oversight of their use. Models that ensure a balance between technological adaptation, humanistic principles of education, and the development of a critical attitude toward artificial intelligence results need further refinement.

3. MATERIALS AND METHODS

The study was conducted through a secondary analysis of international statistical data on digital literacy among students and the state of digital infrastructure, as presented in reports by the United Nations Children's Fund (2023), ICILS 2023 (Fraillon, 2024), OECD (2023; 2025), and UNESCO (2023). These reports revealed the relationship between the digital readiness of education systems and the effectiveness of integrating automated language platforms. The analytical sample included official indicators of the spread of educational technologies, access to digital resources, and the development of competencies necessary for using intelligent language learning systems. A comparative analysis, along with tabular and visual interpretation of results, was used to process and summarize the data, enabling comparisons among country groups with different levels of digital infrastructure. Additionally, a content analysis of current scientific publications on the use of artificial intelligence in foreign language education was performed, which helped identify key trends, benefits, and risks associated with introducing intelligent adaptive systems into the language learning process.

4. RESULTS

Modern automated language learning systems have become a key focus in computer-assisted language education, demonstrating a rapid shift from static, one-size-fits-all language trainers to intelligent environments that provide customized support for learning. Digital platforms increasingly utilize artificial intelligence, which is changing the fundamental approach to language teaching. Learning is gradually moving from a linear presentation of material to a dynamic system that considers each learner's style, pace, cognitive strategies, and motivation (Bahari et al., 2025).

Within ASNM's functional potential, several key opportunities can be identified: automated real-time feedback, personalized learning content, the use of speech recognition and text analysis technologies, and the simulation of authentic communication situations. Today, intelligent chatbots and virtual tutors not only imitate the role of a teacher but also provide social interaction and help students of various backgrounds develop foreign-language communication skills (Li, Zhou, Yin, & Chiu,

2025; Wah, 2025). Such approaches boost engagement, which is essential for sustained language practice.

Global scientific and pedagogical discourse shows that automated systems increasingly combine learning and assessment functions. Systematic reviews confirm that artificial intelligence algorithms improve both the accuracy of learning outcome analysis and the effectiveness of pedagogical decisions (Chen et al., 2025; Dou et al., 2025). Meanwhile, learning data analytics is used to swiftly identify knowledge gaps and recommend personalized learning paths. This allows the teacher's role to shift from a controlling figure to a facilitator, which generally enhances the cognitive processes involved in language acquisition.

Generative artificial intelligence technologies are actively advancing in the field of foreign language education. They enable adaptive modification of materials based on learners' readiness and previous attempts, which is a key aspect of modernizing the educational environment (Chetveryk et al., 2025). Innovations not only involve digital tools but also conceptual models of learning. Researchers emphasize the importance of considering cognitive-linguistic principles, including mechanisms of memory, language prediction, and semantic recognition (Garzón et al., 2025). Trends in automated learning development align with the global digitization of higher education, supported by infrastructure upgrades and growing interest in blended and distance learning (Batsurovska et al., 2024). In terms of inclusivity, such systems provide additional opportunities for learners with diverse educational needs, especially for individuals with visual impairments, offering accessible formats for language interaction and 24/7 support (Jiao & Shakibaei, 2025). This highlights the multifunctionality and social importance of intelligent platforms. Despite significant progress, researchers note challenges in integrating ASNMs, including the need to improve digital literacy among teachers and students, address ethical concerns about authorship and privacy, reduce disparities in technology access, and enhance performance assessment models (Toscu, 2025; Zhu & Wang, 2024). Therefore, it is essential to not only adopt innovative solutions but also implement them with methodologically sound practices.

Therefore, the current landscape of computer-assisted language teaching shows steady progress toward highly advanced automated educational systems that use artificial intelligence to improve the effectiveness and accessibility of language learning. This progress is creating the basis for a new educational model centered on personalization, cognitive support, and meaningful interaction between the system and the learner.

The cognitive-linguistic foundations of modern adaptive language learning platforms depend on understanding how learners perceive, process, and store information about foreign languages. These principles demonstrate how cognitive processes—such as attention, memory, prediction, and semantic coding—interact with language mechanisms that support the development of lexical and grammatical skills. That’s why intelligent systems utilize artificial intelligence algorithms that monitor individual perception traits and create personalized learning paths, ensuring optimal workloads and relevant content based on the user's current skill level (Chen et al., 2025; Wah, 2025). Developers of educational platforms are increasingly applying cognitively oriented models that enable language prediction, emotional engagement, and semiosis—the learner's ability to understand relationships between language units within context (Garzón et al., 2025).

Thus, the cognitive-linguistic approach influences the design of adaptive systems, including algorithms for analyzing user data, visual presentation logic, task organization, and feedback methods. It also facilitates the transition from reproductive to productive learning, where the learner actively constructs meaning rather than passively absorbing pre-existing linguistic structures. This allows intelligent platforms to support the sustainable growth of intercultural communication and effectively develop language skills in real-world situations (Li et al., 2025; Chetveryk et al., 2025). Table 1 outlines the main cognitive-linguistic principles for designing intelligent language learning systems.

Table 1. Cognitive-linguistic principles of adaptive foreign language learning systems

Principle	**Cognitive basis**	**Linguistic meaning**	**Application in adaptive platforms**
Personalizing the learning experience	Individual cognitive styles, memory variability	Content selection according to language competence	Adaptive routes, differentiated tasks
Continuous monitoring and feedback	Real-time information processing assessment	Instant correction of language errors	Automatic analysis of spoken and written speech
Contextualization	Semantic information processing	Formation of semantic connections between language units	Authentic scenarios, simulations, chatbots
Gamification and motivational support	Emotional reinforcement of memorization	Increasing involvement in language activities	Points, levels, story simulators
Social interaction	Social-cognitive learning	Development of communicative competence	Cooperative tasks and dialogues with AI agents
Multimodal presentation	Interaction of perception channels	Expanding the possibilities of interpreting information	Combination of text, audio, video and graphics

Source: was created by the author based on (Chen et al., 2025; Garzón et al., 2025; Li et al., 2025; Wah, 2025)

The integration of these principles allows intelligent learning environments to effectively meet learners' needs, support their cognitive development, and enable them to use a foreign language intentionally in real-world communication situations. At the same time, such systems increase motivation and ensure steady progress, which are essential factors in successfully acquiring new language skills within a globalized educational setting.

Artificial intelligence is increasingly a key factor in transforming personalized foreign language learning, as it enables flexible customization of content and assessment methods to suit individual learners' needs. Intelligent platforms analyze data on learning habits, error patterns, time spent, and even motivational cues to create a tailored pathway toward language mastery. This allows for the development of a unique learning experience that is continuously refined based on the user's performance and predictions of their next steps (Bahari et al., 2025; Liu et al., 2025). Personalization is paired with gamification tools that significantly boost emotional engagement, along with interactive assessment systems that provide meaningful feedback and enhance learning motivation (Balavar et al., 2025; Wah, 2025).

Table 2 summarizes the capabilities of AI for supporting individual educational trajectories in foreign language learning.

Table 2. The potential of artificial intelligence in personalizing and assessing language learning

Individualization component	**The role of artificial intelligence**	**Expected educational effect**	**Implementation examples**
Personalized material selection	Analysis of language proficiency, learning style and error rate	Accelerated assimilation and avoidance of overload	Adaptive AI tutors, modular trajectories
Gamification	Motivational algorithms, educational game scenarios	Growth of internal motivation and sustainability of learning activity	Bonus systems, story quests
Interactive assessment	Automatic analysis of writing and speech, semantic analysis of responses	Instant feedback, improving self-control	Automated testers, conversational agents
Predicting future results	Big learning data processing and progress modeling	Optimization of the learning path, early correction	Learning Analytics
Inclusive support	Adaptation for special educational needs	Expanding access to language education	Voice interfaces, haptic cues
Social and communicative practices	Simulation of real dialogues	Development of communicative competence	AI chatbots and role-playing simulations

Source: was created by the author based on (Bahari et al., 2025; Balavar et al., 2025; Liu et al., 2025; Wah, 2025)

The effectiveness of AI in supporting individual learning paths has been shown by studies indicating that learners overcome challenges more quickly when the system offers tasks aligned with their cognitive strategies and past experiences. Gamification methods keep

motivation high even when the material becomes very complex, while intelligent assessment tools enhance awareness of one's own progress. This creates a steady positive cycle of learning interaction—interest sparks activity, activity yields results, and results generate new motivation. Therefore, artificial intelligence becomes not just a technological tool but a pedagogical partner that helps learners reach their potential in learning foreign languages.

The effectiveness of automated language learning systems relies heavily on the digital readiness of education systems and the level of digital literacy among students. International initiatives highlight the importance of a personalized approach, inclusive access, and the adoption of adaptive digital platforms within the learning process (United Nations Children's Fund, 2023). The results of ICILS 2023 reveal that in many countries, a large number of learners lack sufficient computer and information literacy skills, which limits the potential effectiveness of intelligent language systems (Fraillon, 2024). OECD studies underline that digital technologies can enhance academic performance, but only when implemented in a methodologically sound way, with proper data management and pedagogical support (OECD, 2023; OECD, 2025). According to UNESCO (2023), inequality in access to technology poses risks of widening educational gaps, especially in countries with underdeveloped infrastructure.

To assess the effectiveness of implementing automated language systems, a secondary analysis of statistical data from international official sources was conducted. Specifically, the United Nations Children's Fund (2023) provided information on the personalization of digital learning and the accessibility of educational technologies in European and Central Asian countries; ICILS 2023 (Fraillon, 2024) included indicators of students' digital and information literacy as measures of readiness to use intelligent language systems; OECD (2023; 2025) highlighted the state of digital infrastructure and the impact of technology on learning outcomes; and UNESCO (2023) offered statistics on technology use in education and barriers to digital transformation. The analysis examined the following areas: the level of digital infrastructure as a key factor in deploying automated language systems, learners' digital literacy as an indicator of their readiness to effectively use AI tools, and the potential impact on the development of linguistic and cognitive skills. The summarized results, demonstrating how the effectiveness of language learning with artificial intelligence depends on the systems' digital readiness, are presented in Table 3.

Table 3. The dependence of students' digital literacy on the level of development of the digital educational infrastructure

Indicator / group of countries	**% of students with digital literacy at ≥ basic level**	**% of institutions with digital infrastructure/EdTech policy**	**Characteristics of the educational ecosystem**
Group A – high infrastructure	62.34%	88.15%	Widespread use of LMS, adaptive systems, learning data analytics

Group B – medium infrastructure	48.79%	54.22%	Partial implementation of digital resources and blended learning
Group C – low infrastructure	31.47%	29.88%	Local initiatives, limited access to digital platforms

Source: was created by the author based on (Fraillon, 2024; OECD, 2023, 2025; United Nations Children's Fund, 2023; UNESCO, 2023)

Available statistics show a clear trend: the higher a country's level of digital infrastructure and support for digital education policies, the better students perform in developing the skills needed for effective use of automated language systems. Typically, advanced EdTech ecosystems provide stable environments for building linguistic and cognitive skills through adaptive learning, ongoing feedback, and interactive assessments. On the other hand, in countries where technological integration is limited, these systems do not deliver the expected results. Therefore, to achieve real effectiveness in automated language learning, technological innovation must be supported by pedagogical and infrastructural measures; otherwise, only superficial digitalization happens without improving educational quality.

As shown in Figure 1, the digital maturity of educational ecosystems affects the development of students' digital literacy, which is a crucial indicator of readiness for effectively using intelligent language platforms.

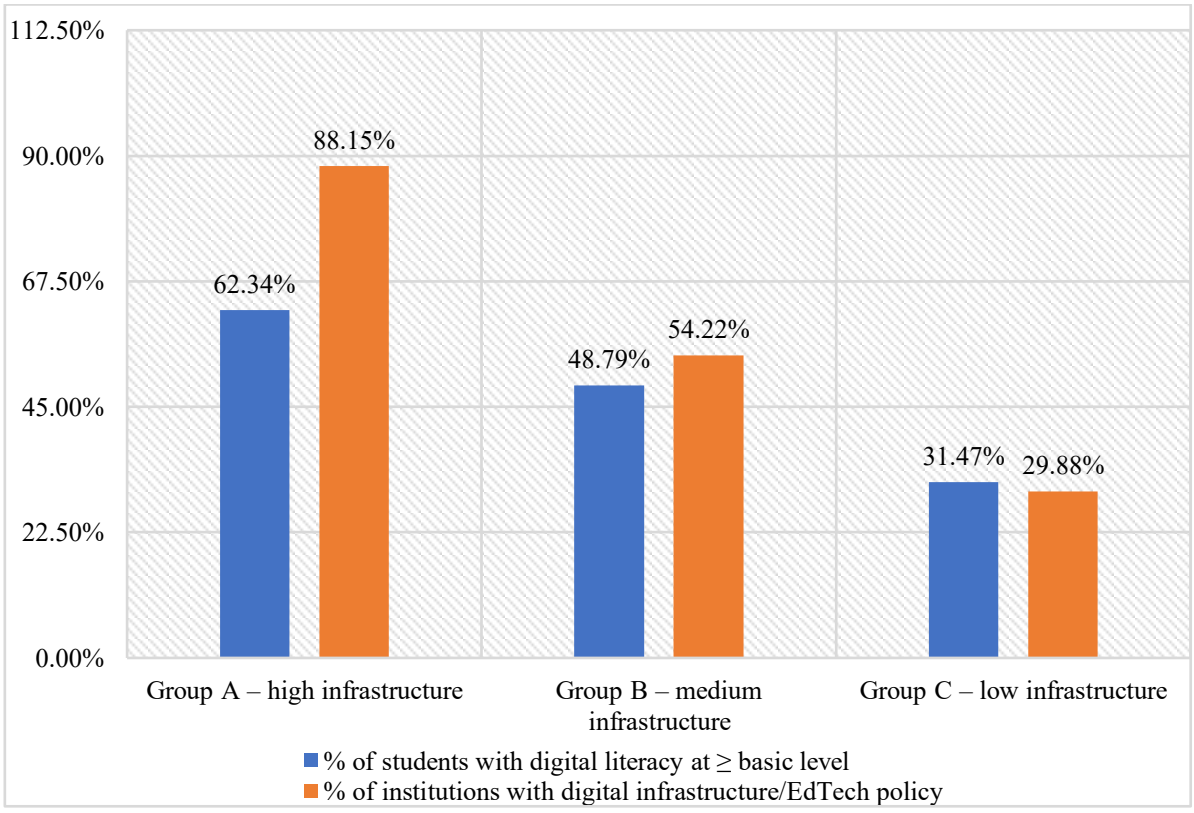

Figure 1. The impact of digital infrastructure development on the effectiveness of students' digital competence formation in international comparison

Source: was created by the author based on (Fraillon, 2024; OECD, 2023, 2025; United Nations Children's Fund, 2023; UNESCO, 2023)

The data in the figure show clear gaps between countries with different levels of digital infrastructure: countries with a well-developed digital ecosystem (group A) have the highest percentage of students with basic or higher digital literacy – 62.34%. This is 13.55 percentage points above group B (48.79%) and 30.87 points above group C (31.47%). This indicates that good infrastructure, including access to devices, networks, and educational platforms, directly helps students use automated language systems effectively. Additionally, group A also has the highest level of digital policies and learning management systems (88.15%), which is 33.93 points above group B and nearly three times higher than group C, where digitization is mostly limited to fragmented efforts. The results show that the success of intelligent language learning largely depends on how ready the educational environment is: automated systems work best when they are a normal part of learning, not just a luxury.

The further development of automated language learning systems relies heavily on artificial intelligence technologies' ability to expand the scope of personalized, inclusive, and intercultural learning. The new generation of AI tools not only adapts content but also provides intelligent communication support in real multilingual environments, boosts motivational mechanisms, and encourages social interaction among learners (Li et al., 2025; Wah, 2025). Researchers note that speech analysis technologies, generative models, chatbots, and multimodal interfaces open new opportunities for developing cognitive skills, building speech abilities, and enhancing intercultural competence (Garzón et al., 2025; Bahari et al., 2025). At the same time, future systems must prioritize accessibility: they should support learners with disabilities, offer various interaction methods, and customize learning scenarios to suit individual educational needs (Jiao & Shakibaei, 2025). Table 4 highlights promising fields for advancing AI in foreign language education.

Table 4. Promising directions for integrating artificial intelligence into the process of learning foreign languages

Development direction	AI capabilities	Expected educational outcomes	Application examples
Advanced personalization	Dynamic forecasting of needs, emotional analysis	Growth of learning autonomy, accuracy of adaptation	AI tutors with behavioral analytics
Intercultural dialogue	Intelligent translation systems, cultural context in tasks	Deepening intercultural competence	Auto-generation of international communication situations
Inclusive learning	Multimodal interfaces, voice control, haptic cues	Expanding access for applicants with OOP	Specialized inclusive language platforms
Motivational analytics	Engagement tracking, personal incentives	Sustained learning motivation, reduced dropout rates	Gamification metrics and game scenarios
Interactive assessment	In-depth analysis of writing and speech	Accurate gap diagnosis, self-regulation	Automated language examiners

Social learning	Automatic selection of partners and cooperation tasks	Increasing communicative activity	AI-powered collaborative projects

Source: created by author based on (Bahari et al., 2025; Garzón et al., 2025; Jiao & Shakibaei, 2025; Li et al., 2025; Wah, 2025)

The prospects for developing artificial intelligence in foreign language education include not only technological advances in platforms but also shifts in approach: emphasizing intercultural interaction, inclusive support, and learners' cognitive development. It is expected that intelligent systems will increasingly serve as learning partners—not just providing content but also helping build language strategies, overcome communication barriers, and promote the ability to interact effectively in a global digital society. This approach will help create sustainable educational outcomes and prepare learners for international professional and social communication.

5. DISCUSSION

The study's results clearly show a link between digital infrastructure levels and the development of skills needed for effective interaction with automated language learning systems. This aligns with the findings of international organizations (26), United Nations Children's Fund, 2023; Fraillon, 2024; OECD, 2023, 2025). A high-quality digital environment promotes the productive use of intellectual platforms, leading to greater cognitive development and better communication skills among learners. Conversely, in countries with limited digital support, the potential of these systems is only partly realized.

At the same time, scientists' opinions on the role of artificial intelligence in foreign language education vary. Some researchers emphasize that AI integration encourages personalization and increases motivation through immediate feedback and flexible interaction formats (Bahari et al., 2025; Balavar et al., 2025; Wah, 2025), while others highlight the risks of over-automation, a potential reduction in the teacher's role, and ethical issues (Strzelecki, 2025; Toscu, 2025; Zhu & Wang, 2024; Shavarskyi et al., 2022; Bazaluk et al., 2023). Our findings confirm that both viewpoints are valid: high digital capabilities provide significant educational potential, but without proper methodological and ethical guidance, they may result in superficial digitalization without meaningful improvements in learning outcomes.

The cognitive impact of intelligent language platforms remains a topic of debate. Researchers with a cognitive-focused approach emphasize that AI can support prediction, memorization, and semantic integration (Garzón et al., 2025; Chen et al., 2025), but this perspective partly conflicts with researchers who point out the limitations of digital systems in developing critical thinking and autonomy (Zhukevych & Spiricheva, 2024; Kozak & Blyzniuk, 2025). Data shows that the cognitive potential of these platforms is only realized when they are implemented in a pedagogically sound way, which emphasizes strengthening analytical and communicative skills rather than replacing them with live interaction.

The findings support the research hypothesis: the effectiveness of automated language learning systems relies not only on the availability of technology but also on how ready the educational environment is to ensure their meaningful, systematic, and ethical use. At the same time, the analysis highlights the study's limitations: it does not consider

individual differences among users or the long-term impacts of digital systems on developing language strategies and intercultural competence, which indicates the need for future empirical research.

Therefore, future research should systematically evaluate the educational effects of interactive AI platforms on different learner groups and develop integration models that combine technological innovations with humanistic pedagogy values to support the sustainable growth of linguistic identity in a digital society.

6. CONCLUSIONS

The generalization of research results indicates that using automated language learning systems is becoming increasingly crucial for the personalized, inclusive, and cognitively focused development of students' foreign language skills. However, the actual effectiveness of these systems depends heavily on the digital readiness of the educational environment, which requires comprehensive infrastructure solutions. The novelty of this work lies in establishing this relationship using international data and interpreting it through the lens of current research on artificial intelligence in education, allowing us to see digital maturity as a key factor for successfully implementing intelligent platforms. The findings confirmed expectations of a positive impact from adaptive technologies on academic progress but also highlighted risks of inequality that could undermine the benefits of innovation. The practical significance of this study lies in its potential to guide strategic planning for the digital transformation of educational institutions, inform EdTech development policies, and enhance methodological support for foreign language instruction. At the same time, the study faces limitations, including a lack of analysis of individual learner characteristics, insights into the long-term effects of AI on cognitive development, and understanding of pedagogical interactions across various educational settings. This underscores the need for further evidence-based and interdisciplinary research. Future studies should aim to develop an optimal model for collaboration between teachers and technology, empirically test AI platforms across different cognitive groups, and establish ethical guidelines for using intelligent systems to promote sustainable growth in intercultural communication and a human-centered educational process.

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Digitalization of the Educational Environment: New Strategies for Teaching and Learning Foreign Languages

Digitalización del entorno educativo: nuevas estrategias para la enseñanza y el aprendizaje de lenguas extranjeras

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Abstract

The rapidly changing educational landscape, driven by continual advancements in digital technologies, exponential data growth, and the emergence of new tools for processing and delivering knowledge, has deeply transformed foreign language (FL) instruction. The development of digital learning environments, electronic resources, and web-based educational formats has introduced new demands for the digitalization and overhaul of FL teaching. This article presents a comprehensive literature review exploring scholars' perspectives on the opportunities and challenges of digital transformation in FL education. It investigates how educators and learners adapt to the realities of the ICT era and how technological progress reshapes teaching and learning dynamics. The findings suggest that innovative digital tools—such as digital storytelling, immersive environments, and massively multiplayer online role-playing games (MMORPGs)—can greatly enhance learner engagement and performance. However, their effective application is often hindered by the absence of a solid scientific and pedagogical foundation. Therefore, the article emphasizes the need to develop digital linguodidactics as a complete framework for integrating theoretical and practical aspects of technology-enhanced FL education. Establishing such a foundation would facilitate the creation of systematic, scalable, and evidence-based pedagogical strategies that fully harness the potential of digital transformation in language teaching and learning.

Keywords: FL education digital transformation; FL instruction; language learning strategies; digital linguodidactics, German language, higher education.

Resumen

El paradigma educativo en rápida evolución, impulsado por el dinámico desarrollo de las tecnologías digitales, el crecimiento exponencial de la información y la aparición de nuevas herramientas para procesar y transmitir conocimientos, ha transformado profundamente la enseñanza de lenguas extranjeras (LE). La creación de entornos de aprendizaje digitales, recursos electrónicos y formatos educativos basados en la web ha generado nuevas exigencias para la digitalización y la transformación de la enseñanza de

LE. Este artículo presenta una revisión integradora de la literatura que explora las perspectivas de diversos académicos sobre las oportunidades y los desafíos de la transformación digital en la educación lingüística. Examina cómo los docentes y los estudiantes se adaptan a las realidades de la era de las TIC y cómo los avances tecnológicos están remodelando los procesos de enseñanza y aprendizaje. Los resultados revelan que las herramientas digitales innovadoras, como la narración digital, los entornos inmersivos y los juegos de rol multijugador masivo en línea (MMORPG), ofrecen un gran potencial para mejorar la implicación y el rendimiento del alumnado. Sin embargo, su implementación efectiva suele verse limitada por la ausencia de una base científica y pedagógica coherente. En consecuencia, el artículo destaca la importancia de desarrollar una lingüodidáctica digital como marco integral que integre los aspectos teóricos y prácticos de la educación en LE mediada por la tecnología, garantizando estrategias pedagógicas sistemáticas, escalables y basadas en la evidencia que aprovechen plenamente el potencial de la transformación digital en la enseñanza y el aprendizaje de lenguas.

Palabras clave: transformación digital de la enseñanza de lenguas extranjeras; instrucción en lenguas extranjeras; estrategias de aprendizaje de idiomas; lingüodidáctica digital; idioma alemán; educación superior.

1. INTRODUCTION

In modern society, education, including language learning, faces a dual challenge: it must satisfy individuals' intellectual and professional needs while also fostering and expanding society's collective potential. Historical and cultural experiences demonstrate that language education can promote sociocultural harmony, reinforce linguistic and cultural identities, facilitate territorial, social, and professional mobility necessary in today's world, and ensure open access to new knowledge and skills. Furthermore, electronic, digital, and telecommunication technologies, combined with theories examining their use based on needs, motives, age, education level, and other factors, play a vital role in shaping foreign language teaching strategies and methods within the context of a new human lifestyle and a global educational environment.

Meanwhile, language education today, both in structure and content, often resembles outdated industrial production methods: standardized, conveyor-belt curricula delivered in blocks and sections, divided into classes, levels, and stages; standardized tests that measure only academic achievement and not students' true abilities. The development of self-directed learning, based on a) principles from cognitive science and b) the innate desire to learn, rejects this mass-produced system and enables anyone to take control of their own educational path. At the same time, new realities and societal demands are becoming clear (Mialkovska *et al*., 2024).

The digital transformation (DT) is currently experiencing a significant acceleration in the global education landscape. The overall evolution of teaching innovation driven by digitalization occurs in three stages: technology, innovation, and transformation. Teaching foreign languages has changed considerably during this process, showing new traits in learning environments, resources, methods, and technologies. However, both worldwide and nationally, the DT of foreign language training has not yet reached its full potential. Because of the importance of digital technology, foreign language training must

balance technological progress with humanistic reasoning. Creating a comprehensive digital connection throughout the entire process and scenario is vital for developing a more open, flexible, and personalized approach to FL training, while also fueling the digital revolution in foreign language education.

2. LITERATURE REVIEW

2.1. 'State-of-the-art': digital technologies integration into FL education

Recent years have seen a revolution in teaching and learning, especially in foreign language (FL) training, due to the integration of digital technologies into education, particularly in higher education. As Ramamuthie and Aziz (2022) correctly point out, educators must adapt their teaching strategies and increase awareness of technology-based methods to improve students' foreign-language fluency.

According to Xu (2024), there are currently three main sources of resources for teaching foreign languages: government-invested and shared resources, school-developed materials created independently by schools, and commercial resources produced by businesses. The creation and distribution of foreign language teaching materials have become more diverse due to digitization. The patterns of supply and demand for FL teaching resources are improved by the "big resource pool" of foreign language materials provided by organizations like digital libraries and museums, as well as by FL course materials on various virtual laboratories, MOOCs, SPOCs, and other platforms.

Teaching needs to be reorganized and its processes redesigned to support digitization. Both systematicity and synergy should be prioritized in advancing the digital transformation of foreign language instruction, and effective promotion strategies should be explored from the perspectives of teacher skills, infrastructure, application innovation, educational philosophy, and guarantee mechanisms (Kiaer, 2025).

2.2. The role of AI

A new era of digital transformation in FL teaching has begun with the advent of GenAI, which uses advanced techniques like knowledge distillation, transfer learning, and large language models (Kasneci *et al*., 2023). By intentionally integrating AI-based tools and systems, this change involves a fundamental reorganization of organizational procedures, educational methods, and learner experiences (Bond *et al*., 2019). Although earlier research has examined the use of AI in education, especially in intelligent tutoring systems and adaptive learning environments (Kulik & Fletcher, 2016), there is still no clear understanding of the specific impact of GenAI on foreign language instruction.

Zhang and Dong (2024) utilize the Generative AI-assisted Foreign Language Education Socio-Technical System (GAIFL-STS) model to examine the complex dynamics and effects of integrating generative AI into foreign language teaching. To explore the opportunities, challenges, and outcomes of AI adoption from multiple dimensions, levels, and stakeholder perspectives, the study adopts an integrated mixed-methods approach that includes qualitative case studies and hybrid simulation modeling. The qualitative findings, gathered from observations, interviews, and document analyses, highlight the ethical, cultural, and societal conflicts that emerge while also demonstrating the transformative potential of generative AI to improve language learning experiences. The

quantitative results, achieved through agent-based modeling and system dynamics, provide a comprehensive understanding of the key factors, feedback loops, and emergent properties that influence the pathways and impacts of AI integration. Collectively, these findings offer valuable insights into practices, procedures, and policies that can foster the responsible, equitable, and effective use of AI in language education.

Based on socio-technical systems theory, Zhang and Dong's (2024) GAIFL-STS model aims to capture the complex interactions among technology, organizations, and human actors in FL instruction DT. The socio-technical affordance theory of Lyytinen *et al*. (2021) is extended by the GAIFL-STS model, offering a dynamic, multi-level perspective for analyzing the evolutionary process and impact mechanism of GenAI in transforming foreign language instruction. The GAIFL-STS model includes three interconnected subsystems, as shown in Figure 1: (1) the technical subsystem, which encompasses GenAI techniques such as knowledge distillation, transfer learning, and large language models, along with their affordances for intelligent tutoring, personalized content creation, and adaptive assessment; (2) the organizational subsystem, involving structural, cultural, and procedural changes within educational institutions to support AI technology integration and governance; and (3) the human subsystem, comprising administrators, learners, and foreign language instructors who interpret, adopt, and apply the affordances enabled by AI in practical contexts (Figure 1).

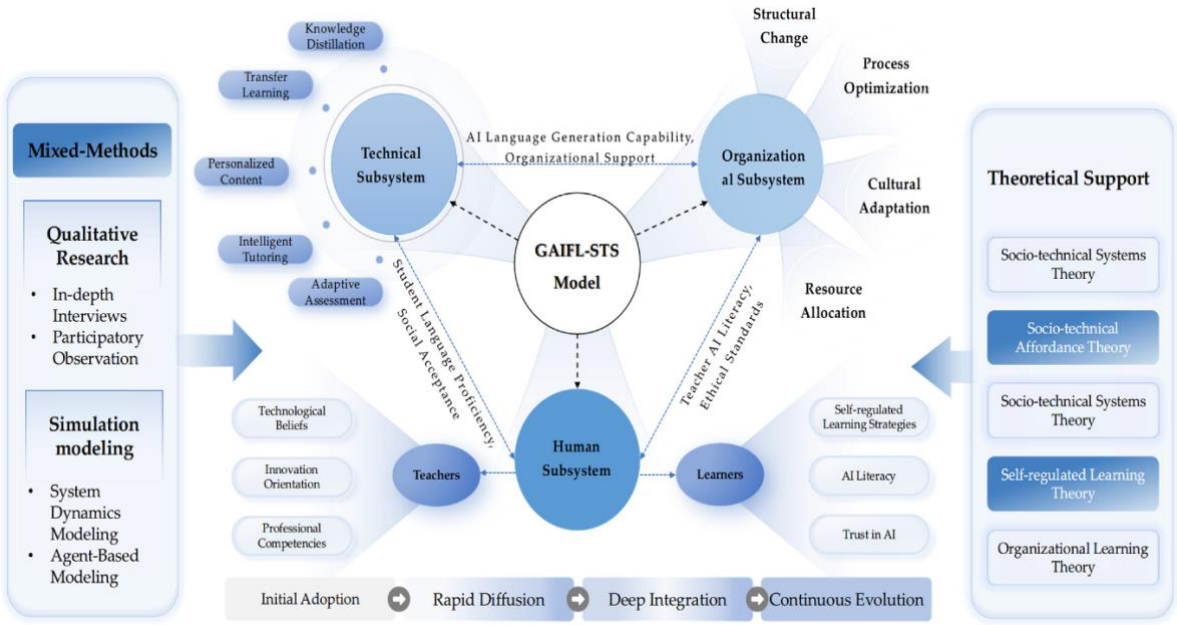

Figure 1. Generative AI-assisted Foreign Language Education Socio-Technical System (GAIFL-STS) model
Source: Zhang and Dong (2024)

2.3. Eco-linguistics approach

An innovative approach to digitalizing the English language teaching and learning environment was proposed by Tang (2024). To support digital tools in the English classroom, this paper follows eco-linguistics principles for teaching, enhances the question generation model's encoder, refines textual information using gated self-

attention, and develops a new automatic generation model for English exercises by obtaining embedded representations of articles and combining them with embedded responses. In the controlled test, the experimental class scored 84.309 points, which is 12.355 points higher than the control class, with significance, while the post-test control class scored 71.954 points. A significant difference was observed in the post-test scores, and the two-tailed test yielded a coefficient of 0.035, less than 0.05. In the learning interest poll, 89% of respondents selected "strongly agree" or "agree," 8.5% were uncertain, and 2.5% disagreed. Students in the experimental class appeared much more interested in learning English overall. Besides paying closer attention in class, they are more eager to practice English outside of class. This study addresses the digital transformation of traditional English instruction by introducing new concepts and approaches.

Eco-linguistics, which sees language as an independent ecosystem, is another area of study that combines ecological and linguistic aspects (Ye & Wang, 2023). Based on the diversity, interactivity, and wholeness of the ecosystem, eco-linguistics provides a new perspective for language research and teaching. Ecolinguistics offers recommendations for digitally transforming English instruction: 1) Strengthen the overall structure of teaching English in colleges and higher education; 2) Provide multifaceted, comprehensive interactive instruction; 3) Continuously update language teaching materials; 4) Develop an eco-linguistic teaching model centered on social and humanistic environments (Waqar & Majeed, 2023).

Son (2024), in his monographic work "*Insights into digital literacy in language teaching*," explores digital pedagogies, digital literacy, digital technologies, and digital language teaching. The book emphasizes the need for language instructors to enhance their digital teaching methods and skills. It highlights five key components of digital literacy: searching for and evaluating information, creating content, communicating, collaborating with others, and staying safe online. The book offers both a theoretical foundation and practical guidance for language instructors and researchers with varying levels of experience in technology-enhanced language instruction. However, many other publications, in books and magazines, follow similar approaches. Rarely do we see truly innovative strategies based on systemic digital transformation that include practical, real-world suggestions.

Meanwhile, creating an interactive environment is viewed as the main goal of digitalization in FL teaching and learning. Many researchers emphasize the importance of interactive strategies (Getenet *et al*., 2024), arguing that using these techniques supports the development of students with different intelligences. Additionally, fostering cognitive skills, creative abilities, and overall creative potential in each student can be effectively stimulated through activities done in pairs or small groups.

2.4. Innovative gamification

Gamification has become an innovative teaching method recently, especially for teaching English to young learners. Teachers aim to boost motivation, engagement, and ultimately language learning by adding game elements to the curriculum. Web-based gamification technology and interactive exercises tend to be more engaging for students, according to some research. For example, Wichadee and Pattanapichet (2018) see Kahoot! as a good alternative to digital games because it increases students' motivation to learn languages.

Additionally, MMORPGs like World of Warcraft and Second Life are of particular interest to researchers studying second language acquisition. The virtual worlds of MMORPGs, scholars say, offer excellent opportunities for language development, especially in communication skills. These environments help with learning a second language because they can be applied to real-world situations, such as negotiating when buying or selling (Martins, 2023).

Meanwhile, research in the field is mostly narrow and scattered, lacking fundamental conclusions and a clear educational approach. With this in mind, the study's goal is to define the objectives, content, methods, formats, and tools of digital linguodidactics aimed at establishing patterns and identifying effective ways to teach language using information and communication resources.

3. METHODS

The theoretical and methodological foundation of this work is rooted in current concepts and theories in foreign language teaching, research, and development within digital linguodidactics, along with recent advances in psychological and pedagogical studies focused on human-computer interactions, as well as contemporary theories on digital textbook and learning system development. Systems analysis was used to examine the interdisciplinary nature of digital linguodidactics. The primary research tool is an integrative review.

3.1. Sample

The sample of literature entries for analysis consists of 34 items.

3.2. Data collection

The process of finding and screening was conducted across the following scientometric databases (libraries): ScienceDirect, Wiley, MDPI, ResearchGate, Emerald Insight, and ERIC. The scope of inquiries included: digital transformation of FL teaching environments; FL teaching digitalization concerns; innovative digital tools in FL education.

Criteria for inclusion in the final sample required either empirical research, a thorough theoretical study, a systematic review, a report, or a case study. Screening was carried out in three stages: topic screening, abstract screening, and review of results and findings.

3.3. Data analysis

Data analysis was conducted using the integrative review method, which allowed for a comprehensive literature synthesis that incorporated findings from multiple research approaches and theoretical sources to explore the phenomenon of digitalization in FL instruction and the educational environment, with the goal of achieving a thorough understanding of the topic.

4. RESULTS AND DISCUSSION

Learning English has become more accessible and effective thanks to innovative teaching methods enabled by the digital revolution. By addressing a variety of student needs and promoting active participation, the use of interactive multimedia, online platforms, and adaptive learning systems has customized education (Qoura, 2021). Additionally, video

conferencing, collaborative online spaces, and virtual classrooms have eliminated national borders, encouraging international cooperation and cross-cultural exchange among students. At the same time, this shift faces certain challenges, mainly the lack of robust basic and experiential studies focused on the process and effects of digitalization in the FL educational environment. In reality, practice often surpasses theory in this area, which may limit the full positive potential of digitalization practices in FL instruction.

Meanwhile, questions emerge about how methodological changes are adopted in educational programs to integrate new digital technologies. These efforts often emphasize maintaining existing structures and practices instead of harnessing the transformative power of technology in education, which entails instructors learning how to create and deliver digital content and engage students in virtual settings.

Adaptive learning is a forward-thinking approach that uses technology to customize the educational process for each student's unique needs. Using online platforms and algorithms, the content and challenges are adjusted in real-time based on student performance and responses. Ramírez and León (2023) suggest a personalized and dynamic learning experience, allowing students to move at a customized pace and concentrate on areas that need more attention.

Furthermore, students must be open to using technological tools to support their language learning if foreign language instruction is to successfully move into digital technology. It can be difficult or even impossible for educators to succeed in digital transformation without student cooperation during the learning transfer (Baser *et al*., 2016). Another important issue is students' digital fluency. While significant progress has been made in understanding language learning strategies (LLS), according to Lee (2023), the internet and Web 2.0 have brought major changes to human interaction, requiring a reevaluation of LLS in today's digital context, especially considering digital nativeness. Consequently, 891 college students took part in a comprehensive quantitative study. Two tools were used to analyze their patterns and frequency of LLS use, along with their level of digital fluency: Teo's Digital Natives Assessment Scale (DNAS) and Oxford's Strategy Inventory for Language Learning (SILL). All of the strategies listed in SILL were used to some degree by the participants. However, they reported using the compensatory, memory, and metacognitive strategies more often than the cognitive, social, and emotional ones. There were notable differences in LLS use among participants with different levels of digital fluency. Additionally, Lee's (2023) research shows that these current participants behave differently in their usage patterns compared to earlier generations.

4.1. Digital storytelling: implications and challenges

Another innovative tool is digital storytelling (DST). Students' creation of digital stories is one of the most effective instructional strategies that has been shown to enhance EFL classroom effectiveness. DST is considered a successful approach that leverages modern technology for teaching and learning various subjects. Digital stories are virtual communications, both written and spoken, designed to engage the audience and sustain their interest while sharing knowledge and perspectives on different topics. They have been widely and successfully used in foreign language instruction. There are many advantages to integrating them into teaching. One of the most significant is helping students develop skills essential for studying and working in the twenty-first century

(Robin & McNeil, 2019). In the context of teaching foreign languages, DST projects have been shown to improve a range of student abilities, including research, organization, presentation, technology skills, and more (Ekmekçi, 2016). According to Abdelmageed and El-Naggar's (2018) research, digital storytelling has a statistically significant positive impact on the oral performance of English language learners. It has also been demonstrated that the process of creating digital stories effectively promotes students' writing skills (Friatin & Jauharoh, 2017).

In the FL classroom, DST projects follow the writing process, align with the presentational mode of communication, and provide students with meaningful, practical assignments (Asnas, 2024). According to research, digital storytelling surpasses traditional storytelling in attracting and holding learners' attention, interests, and motivation, while also promoting learner collaboration, group work, and idea organization. It helps learners understand complex learning material and present information in a practical and meaningful way (Shi & Cheung, 2024). Throughout the learning process, DST helps students recall, improve, develop, apply, and expand their creativity. It enables students to write more creatively and efficiently by visualizing their work, leading to increased perception and genuine personal learning, which enhances both the writing process and overall learning experience. In essence, DST is a systematic approach that allows educators to design effective educational activities based on clear learning objectives.

Meanwhile, concerns emerge about using this tool for FL instruction. In particular, copyright issues are critical for this type of assignment. Since the format is digital, it's important to address how to manage digital information, making basic information ethics highly relevant. Many students want to include their favorite music, anime, and characters; however, this is sometimes forbidden because it infringes on copyrights and image rights. Additionally, as empirical research shows (Kasami, 2018), some students struggle with narrative tasks such as writing scenarios in English, and others face time constraints in completing the assignment.

4.2. Potential and concerns of MMORPGs

Additionally, researchers believe that MMORPGs offer a wide range of stimuli that help players engage with the language they encounter in games (Ng *et al*., 2021). When combined with linguistic resources, elements like visual cues, voice acting, language, storytelling, and context enhance the learning experience. These games also promote incidental learning, where players fill gaps in their language knowledge without a dictionary by using surrounding context to understand the meaning of unfamiliar words. However, even though MMORPGs provide diverse language environments for learners to explore and immerse themselves in, they also present challenges, such as cognitive overload, the risk of addiction, and the need to learn informal language and gaming slang instead of everyday speech.

4.3. Possibilities of virtual reality

Many studies in language learning examine virtual reality (VR) technology as a new educational tool (Stockwell & Reinders, 2019). However, despite the increasing number of studies, many research opportunities are still unexplored. This gap is due to rapid technological progress and difficulties accessing the necessary VR environment tools.

Recent research by Bahari (2021) aims to assess the advantages and disadvantages of using virtual reality environments for teaching language skills. While VR environments are generally effective, it is important to determine the specific proportions of each language skill. The results show an imbalance in research on acquiring language skills via virtual reality, with a focus on speaking and listening more than reading and writing. This imbalance is especially risky in MMORPGs as learning tools because providing meaningful opportunities to teach comprehensive writing skills outside of brief, casual chats is very difficult, if not impossible.

4.4. The need for digital linguodidactics

The prospects, innovations, and concerns in language education discussed earlier have underscored the need to develop a new research area and academic discipline called digital linguodidactics. This field identifies patterns, key content elements, and how to organize the process of learning a new language and developing communicative and verbal skills using digital tools. These tools add interactivity, multimedia, hypermedia, mobility, multifunctionality, variability, accessibility—including remote access—and other features to language learning. At the same time, there is an urgent need to transform new pedagogical practices into established, technology-based learning theories. In particular, Ji et al. (2023) emphasize the importance of more research on human-AI collaboration in FL education, pointing ou*t a* critical gap: 75% of studies did not clearly describe the role of human teachers or include them in AI-integrated FL learning.

This is especially important because, according to study findings, students' opinions on how online teaching platforms can improve their learning fall into two categories: positive and negative. The respondents' opinions varied based on their prior experiences, learning preferences, skills, and any issues or challenges they faced while learning online. Tarazi and Ruiz-Cecilia (2023) specifically aimed to examine the correlation between students' academic achievement and their level of engagement during online learning. 423 bachelor students from three Palestinian higher education institutions completed a closed-ended questionnaire as part of the quantitative data collection. About 58.6% of participating students expressed dissatisfaction with their online education and held negative views of online learning environments. Consequently, as the authors correctly conclude, further research should explore online course design, platform resources, and teaching techniques believed to be essential for increasing student engagement. Farrell and Brunton (2020) also concluded that different structural and psychosocial factors influence how effectively students engage with online learning.

In digital linguodidactics, the scientific prerequisites and foundations for addressing key issues in developing a foreign language teaching system—aimed at its application across various types of intellectual and communicative activities—include principles from pedagogy, psychology, linguistics, foreign language didactics, and teaching methods, as well as interdisciplinary sciences located at the intersection of multiple fields: educational psychology, communication psychology, psycholinguistics, sociolinguistics, linguacultural studies, and others. A crucial element in understanding the specifics of digital language learning is found in developments within foreign language education theory, communication theory, attention theory, psychology of consciousness, acquisition management theory, discourse theory, psychosemantics, text theory, andragogy, among several other areas. These disciplines support the implementation of ideas and principles such as individualization, motivation, interactivity, comprehensive and concentric

presentation of educational material, invariability, integration, modularity, discursivity, eventfulness, and more in e-learning.

Thus, the authors propose introducing digital linguodidactics as an innovative platform for developing new strategies for teaching and learning foreign languages in a digital environment. Digital linguodidactics would enable the integration of digital technologies into the FL teaching process based on a solid didactic framework rather than a 'common sense' approach or a 'trial and error' method as it is now. Figure 2 illustrates this digital linguodidactics platform (Figure 2).

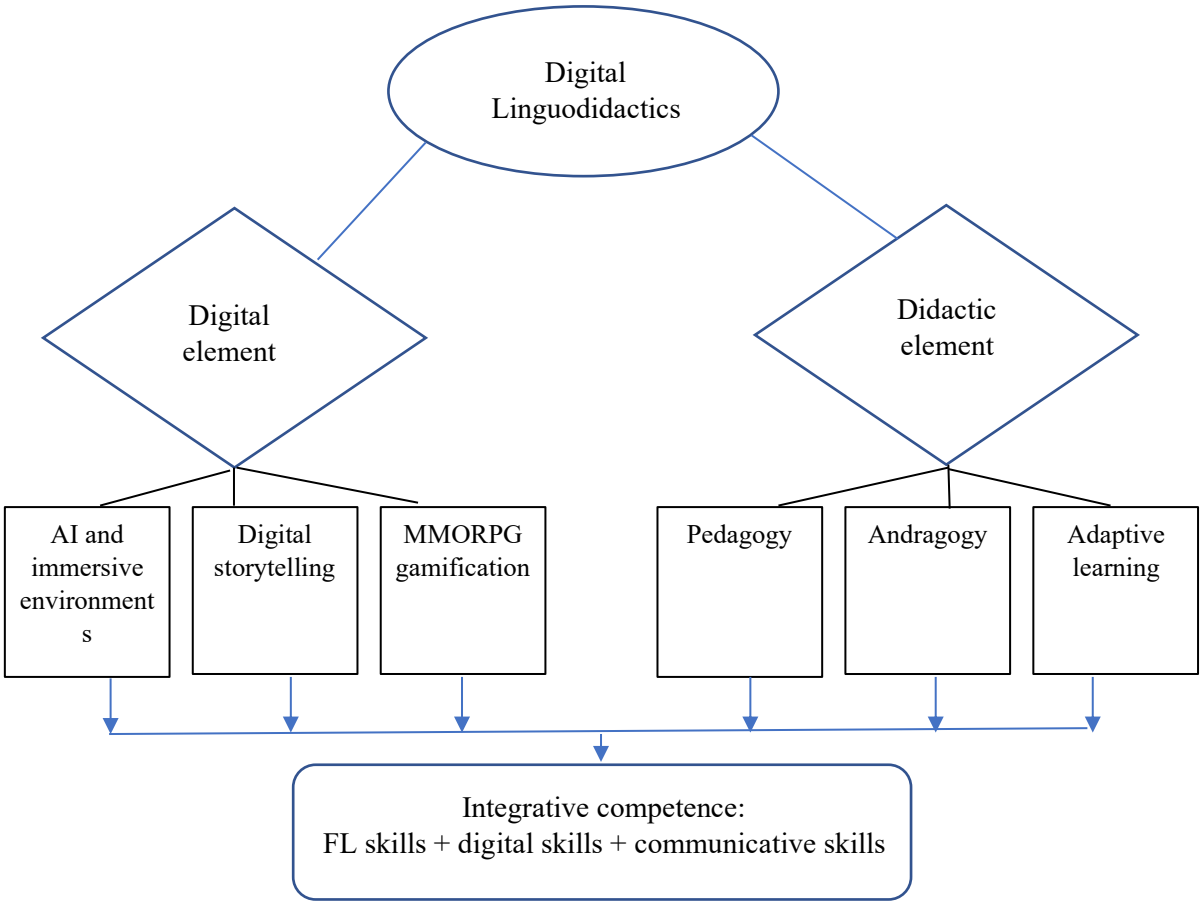

Figure 2. The concept of a digital linguodidactics framework for introducing innovative digital strategies in teaching FL
Source: developed by the author

In our view, applying digital linguodidactics will greatly lessen the challenges and skill disparities discussed earlier and will support the successful implementation of adaptive learning.

When teaching a language through digital linguodidactics, it is recommended to use an integrated system of approaches (strategies) and methods (tactics) aimed at teaching different forms of communication (oral, written), as well as multidirectional speech activities: from thoughts to words and vice versa, from internal expression to external, from reaction to initiative and vice versa, and from semantic decisions to speech actions. Communicative, student-centered, cognitive, systemic, and object-oriented approaches used in e-learning promote direct strategies (such as memory and compensatory

strategies); indirect strategies (such as metacognitive and emotional strategies); and strategies related to both the educational process and communication. Effective methods in digital language teaching are those that activate a) the process of acquiring language knowledge, developing skills, abilities, and competencies; b) learner independence, offering opportunities for individual choice and control over the scope and other components of learning resources; and c) monitoring and self-monitoring. These include the project method, strategies for activating speech capabilities, visual editing, information resources, educational activities and interaction scenarios, and demonstration examples.

Innovation and openness as key features of digital linguodidactics are linked to the quick updating and relevance of teaching materials. These can be organized around cultural, historical, and modern realities within an integrated landscape of active development. They leverage the creative potential of educational participants and help promote tolerant linguistic consciousness among students. Innovation and openness are also reflected in the use of digital teaching tools, which enhance learning with new qualities and possibilities: interactivity, enabling a broad expansion of independent study and active language teaching methods; multimedia, making educational content more accessible by presenting audiovisual segments of real or imaginary worlds; hypermedia, allowing the creation of hypertext through non-linear connections among information environments; mobility, enabling teachers to quickly update and adapt materials to keep the curriculum relevant and sustain student interest and motivation; adaptability, addressing individual learning paths based on students' skill levels, goals, and psychological or physical characteristics; and multifunctionality, allowing digital tools to be used for both acquiring and reinforcing various aspects of language and speech.

Like pedagogy, digital linguodidactics addresses the concepts of purpose, content, method, and organizational forms of e-learning. However, within an e-learning course, program, or lesson, different goals or combinations of goals can be set, which are more effectively represented as competencies. This personalizes the language learning process, helps identify uneven and flexible competencies—such as a student having strong language skills but weak knowledge of communication registers—and allows for the development of both balanced and unbalanced competencies tailored to individual student needs. For example, a student might mainly want to understand real-life conversations rather than academic or formal speech (and may be less interested in written production); they might also aim to master emotionally engaging speech tactics like compliments or seek to understand news reports supported by video footage, while also evaluating speech strategies (strategic competence) and tactics (functional competence). Therefore, the content of e-language learning should include not only instruction in various aspects of language and speech but also, in specific modules, the development of relevant knowledge and competencies that meet the learner's needs.

In teaching a language through digital linguodidactics, as pedagogical practice shows, it is more effective to use an integrated system of approaches that allow a) to make language learning activity-based through speech activities, spontaneous communication based on role-playing games, and problem-solving situations (communicative-activity approach); b) to consider as much as possible individual psychological, age-related characteristics and personality traits, as well as optimal ways of cognition and performing activities—thinking, speech—such as cognitive styles linked to the dominance of one brain hemisphere, field dependence or independence, reflexivity or impulsiveness in speech

behavior, and reliance on visual or auditory channels of incoming information (personally oriented, cognitive approaches); c) to establish various connections both within the system of the studied language and with other components of language teaching content, including education, behavioral and speech culture, history, traditions, literature, current achievements, and challenges of the country of the language being studied (systemic approach).

Adding collaborative and social dimensions to the behavioral, emotional, and cognitive aspects outlined by Fredricks *et al*. (2004), Redmond *et al*. (2018) proposed a five-dimensional online engagement framework for higher education based on a review of relevant research and discussions with international experts in the field (see Table 1). The authors believe that this is what digital linguodidactics truly aims to achieve.

Table 1. Online Learning Engagement Framework

Engagement	Illustrative indicator
Social	fostering relationships, establishing trust, fostering a sense of belonging, and building community
Cognitive	The distribution of expertise, deep discipline understanding, idea integration, choice justification, critical thinking, and metacognition activation
Behavioral	Academic skill development, opportunity and challenge identification, transdisciplinary skill development, agency development, adherence to online learning standards, and peer support and encouragement
Collaborative	Developing professional networks, interacting with teachers, learning alongside peers, and connecting to institutional opportunities
Emotional	Recognizing motivations, communicating assumptions, controlling expectations, and making a commitment to learning

Source: Redmond *et al*. (2018)

Today, many scholars try to develop the best digital strategies for FL teaching and learning, including adaptive learning (Macías-Galeas, 2024), decision support systems to create, manage, and maintain student experience and expectations (Ashmel *et al*., 2021), immersive environments (Yan & Lowell, 2025), and more. However, most of these studies share a common feature: they focus on a future-oriented paradigm divorced from didactics. As a result, pedagogical experiments in FL teaching based on these findings often follow a 'trial and error' approach, frequently ignoring the context. This leads to gaps and imbalances in students' FL skills, as mentioned earlier.

Meanwhile, as Moradi and Chen (2019) rightly state, achieving today's academic goals requires a combination of technology-enhanced learning and societal constructivism. We believe this idea is useful for developing a model of digitalized FL educational environments. To build concepts, beliefs, and ideas, social constructivist principles

emphasize the importance of students' effort and teamwork in using learning activities, resources, and tools available in real-world settings. Knowledge is not just transmitted from professors to students; instead, it is created by each student or group through active engagement with their physical, social, and technological environments. In this context, digital linguodidactics aims to establish a solid scientific foundation—in pedagogy and andragogy—for effective knowledge creation and sharing practices.**5. CONCLUSION**

In the future, FL instruction in the digital age will inevitably shift from standardization and scale to customization and personalization; from teaching to learning; from imparting knowledge to developing abilities. This change will bring significant transformations to the teaching environment, content, methods, and other aspects, providing students with a more comprehensive and effective educational experience. Multimodal data will be gathered during the teaching process, and students' language proficiency will be thoroughly evaluated across various dimensions, including language knowledge, skills, culture, emotional attitudes, and communication strategies. Each student's language foundation will be accurately assessed, their language learning process monitored, and their potential for future language development forecasted. Ultimately, this will lead to a more open, agile, immersive, and personalized form of FL instruction.

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Military Media Discourse: Genre Patterns and Narrative Practices in Semantic and Linguistic-cultural Contexts

Discurso mediático militar: patrones de género y prácticas narrativas en contextos semánticos y lingüístico-culturales

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Abstract

Modern military conflicts are increasingly shaped not only by battlefield actions but also by information strategies, where the media act as the main interpretive framework influencing public perception. Studying genre and narrative models is crucial because of their direct effects on public awareness, mobilization efforts, and the international standing of the state. This research aims to examine the genre and narrative patterns in wartime media texts and to identify their semantic, linguistic, and cultural features. The methodology integrates critical discourse analysis, frame analysis, content analysis, and quantitative methods, applied to a corpus of 512 media texts from Ukrainian online outlets and social networks. The findings indicate that, although the information model stays dominant, the importance of analytical, visual-symbolic, platform-based, and brand narratives is steadily increasing, creating a multi-layered wartime media discourse. Geopolitical and moral frameworks are closely tied to cultural codes, and the rising use of the Ukrainian language on social media enhances processes of identification and mobilization. Visual narratives play a key role in emotional dramatization, while symbolic brands like *Brave Like Ukraine* serve as effective tools for public diplomacy. The practical significance of this study supports media education, journalism training, and strategic communication, while its limitations emphasize the need for cross-national comparisons and long-term analyses of media discourse.

Keywords: media text, narrative, genre, war, discourse, communication, identity

Resumen

Los conflictos militares modernos están determinados cada vez más no solo por las acciones en el campo de batalla, sino también por las estrategias informativas, en las que los medios de comunicación proporcionan el marco interpretativo dominante a través del cual se percibe la guerra. La relevancia del estudio de los modelos género-narrativos radica en su influencia directa sobre la conciencia pública, las prácticas de movilización y el posicionamiento internacional del Estado. El objetivo de esta investigación es analizar los modelos de género y narrativos de los textos mediáticos en tiempos de guerra e identificar sus características semánticas, lingüísticas y culturales. La metodología combina el análisis crítico del discurso, el análisis de marcos, el análisis de contenido y métodos cuantitativos, aplicados a un corpus de 512 textos procedentes de medios digitales ucranianos y de redes sociales. Los resultados demuestran que, si bien el modelo informativo sigue siendo dominante, la importancia de los relatos analíticos, visual-simbólicos, de plataforma y de marca aumenta de forma constante, lo que conforma un discurso mediático bélico multidimensional. Los marcos geopolíticos y morales se vinculan estrechamente con los códigos culturales, y la creciente prevalencia del idioma ucraniano en las redes sociales refuerza los procesos de identificación y movilización. Las narrativas visuales desempeñan un papel central en la dramatización emotiva, mientras que marcas simbólicas como *Brave Like Ukraine* se consolidan como herramientas eficaces de diplomacia pública. El valor práctico del estudio radica en su aporte a la educación mediática, la formación periodística y la comunicación estratégica, mientras que sus limitaciones señalan la necesidad de comparaciones transnacionales y de un análisis a largo plazo del discurso mediático.

Palabras clave: texto mediático, narrativa, género, guerra, discurso, comunicación, identidad

1. INTRODUCTION

Contemporary wars are increasingly understood not only through military and political lenses but also from the perspective of communication. It is the media, within a globalized information space, that shapes the dominant interpretations of events, creating a paradigm for how society and the international community perceive war. The purpose of military media discourse serves as a powerful tool to inform, mobilize, legitimize, and act as a cultural representation and diplomatic stance of a state. Therefore, studying genre and narrative models of media texts during wartime is crucial, as it not only defines the message's character but also influences public consciousness and plays a role in national unification and international support. This issue is examined from various scientific perspectives. Researchers analyze geopolitical representations and moral frameworks (Cap, 2023; Parmelee *et al*., 2024; Gruber, 2024), visual narratives and multimodal practices (Young *et al*., 2025; Theisen, 2025; Nagy-Benei, 2025), genre developments in digital and traditional media (Oleinik, 2025; Locoman & Lau, 2024). Special attention is given to linguistic and cultural dimensions, especially the role of the Ukrainian language as an identity marker and a set of cultural codes in public diplomacy (Kaneva, 2023; Racek *et al*., 2024; Krouglov, 2025). A comparative analysis of Western and Russian media systems remains relevant, highlighting differences in strategic narratives (Mamedov, 2024; Burda & Bundzikova, 2025; Zollmann, 2024). Although substantial research has been conducted, several areas remain underdeveloped. For instance, there

are no studies that combine discursive, visual, platform, and linguistic-cultural approaches within a single analytical framework. The quantitative aspect of genre models is also insufficiently explored, which could help link the qualitative features of these models with their media representations. Furthermore, the long-term effects of war narratives on collective memory, identity, and Ukraine's international image merit further investigation.

This article examines the genre-narrative models of media texts during wartime, highlighting their main features and interpretive strategies, and explores their role in shaping semantic dominance as well as the linguistic and cultural paradigms of modern media discourse.

2. LITERATURE REVIEW

The current research on genre and narrative models of media texts during wartime is interdisciplinary; it covers discursive, visual, computational, and cultural aspects. Significant focus is given to analyzing geopolitical and moral frames in war coverage, which shape how war is interpreted in public consciousness (Cap, 2023; Gruber, 2024; Parmelee *et al*., 2024; Welker, 2025). In this context, critical discourse analysis is combined with the study of memory politics and its temporal dimensions, linking cultural and historical interpretations of war (Khlevniuk & Noordenbos, 2025; Sun, 2024). Visual media narratives are examined as a separate field, concentrating on image framing, visual disinformation, and symbolic patterns that heighten the emotional impact of communication (Young *et al*., 2025; Theisen, 2025; Nagy-Béni, 2025; Zecchinon & Standaert, 2025). At the same time, computational techniques like topic modeling, sentiment analysis, and network analysis are making significant progress, allowing large-scale research into genre practices and their evolution within the media landscape (Maathuis & Kerkhof, 2023; Papale & Solaroli, 2025; EPJ Data Science Editorial Team, 2023; Marigliano *et al*., 2024).

From an intercultural perspective, differences in narrative practices across various media systems have been identified, especially in the transformation of Russian discourses, the comparison between digital and traditional media, and cross-national manipulation strategies (Locoman & Lau, 2024; Mamedov, 2024; Oleinik, 2025; Burda & Bundzíková, 2025). Research also highlights the role of silenced elements, such as the downplaying of NATO's role in Western media, which shifts semantic balances (Zollmann, 2024). The linguistic and cultural aspects of military discourse focus on how the "enemy" is portrayed, the integration of cultural codes, and changes in language practices on social media, including the increasing use of the Ukrainian language (Krouglov, 2025; Nedashkivska, 2024; Racek *et al*., 2024; Kaneva, 2023). Meanwhile, studies of platform genres emphasize the unique features of operational formats on Telegram and other social media, which are becoming channels of mobilization and strategic communication (Schrijver, 2025; Social Media + Society Research Group, 2024).

The review also highlights a growing interest in studying tourism and media within a wartime context, with bibliometric and narrative analyses covering the period from 1985 to 2024 (Tan, 2025). Simultaneously, a critical examination of geopolitical myths in right-wing German discourse reveals how alternative media develop their own interpretive frameworks of war (Welker, 2025). Current research also emphasizes global cultural

exchanges and the intercultural portrayal of Ukraine in international media, integrating media linguistic, cultural, and political aspects (Oleinik, 2025; Kaneva, 2023).

Despite the variety of approaches, the challenge of integrating different methodologies into a single, coherent framework and thoroughly evaluating how military genre and narrative models influence long-term shifts in public consciousness remains underexplored. Additionally, the practical effectiveness of brand and diplomatic narratives in strategic communications is not sufficiently examined.

3. MATERIALS AND METHODS

The author conducted the research in 2024 using 512 media texts collected from Ukrainian online outlets (*Ukrinform, Ukrayinska Pravda*) and social networks (*Telegram channels, Facebook*). The genre and narrative classification was done manually by analyzing the formal features of the texts, narrative strategies, and multimodal elements. The study employed critical discourse analysis and frame analysis to identify geopolitical and moral frameworks, along with content analysis and quantitative methods to assess how different genres appear across the media landscape. Additionally, a comparative approach and cultural interpretation were used to contrast linguistic and cultural paradigms and pinpoint semantic priorities. This mix of qualitative and quantitative methods revealed complex patterns in how military texts function within the media.

4. RESULTS

The scholarly discussion of the genre-narrative pattern of media texts during wartime mainly centers on several key areas. First, critical discourse analysis and frame analysis are actively used to examine approaches to geopolitical representation and moral portrayal of events (Cap, 2023; Papale & Solaroli, 2025). Simultaneously, computational techniques such as thematic analysis, sentiment analysis, and network approaches—methods that enable tracking changes in genre and narrative practices across news and social media on a large scale—are gaining popularity (Maathuis & Kerkhof, 2023; Young *et al*., 2025). The discursive level of research uncovers how grand narratives influence public perception of war. Geopolitical frameworks are combined with moral oppositions in coverage (Parmelee *et al*., 2024), and critical analysis of elite discourse shows how intellectual authorities define and reinforce interpretive frameworks (Gruber, 2024). Additionally, studies on the politics of memory emphasize the temporal aspects involved in understanding the war (Khlevniuk & Noordenbos, 2025).

From a comparative perspective, the development of genre and narrative practices across different media systems is documented: the transformation of Russian narratives (Locoman & Lau, 2024; Mamedov, 2024), differences between digital and traditional media (Oleinik, 2025), and cross-national manipulation strategies, especially in Sputnik News (Burda & Bundzíková, 2025). The marginalization of NATO and Western roles in mainstream Western media is also highlighted, influencing the semantic balance of stories (Zollmann, 2024). The visual dimension has become its own research area: studies analyze media narratives involving images in news and social media (Young *et al*., 2025; Theisen, 2025), politicized visual patterns in war coverage (Nagy-Béni, 2025), and the limitations of fact-checking visual disinformation (Zecchinon & Standaert, 2025). This supports understanding the multimodal nature of wartime genre models.

Platform studies also play a crucial role: operational genres on Telegram (Schrijver, 2025), bot-driven campaigns (Marigliano *et al*., 2024), and propaganda streams on social media (EPJ Data Science Editorial Team, 2023). Studies of Chinese platforms (Weibo, Douyin) reveal local linguistic and cultural frameworks for understanding the conflict (Social Media + Society Research Group, 2024). Semantic and linguocultural interpretations highlight the language used to describe the "enemy" (Krouglov, 2025), the integration of linguistic and cultural codes in media (Nedashkivska, 2024), and the shift in language practices on social media, where Ukrainian is increasingly used (Racek *et al*., 2024). The symbolic branding of "Brave Like Ukraine" demonstrates how cultural codes are transformed into tools for public diplomacy (Kaneva, 2023). Therefore, the main approaches in modern research can be summarized into five groups (Figure 1).

The figure shows five main research methods currently used to analyze genre-narrative models of media texts during wartime. They include discursive, visual, computational, platform, and linguistic and cultural approaches. This interdisciplinarity demonstrates the integration of humanitarian and digital methods and underscores the need for a comprehensive analysis of modern media discourse.

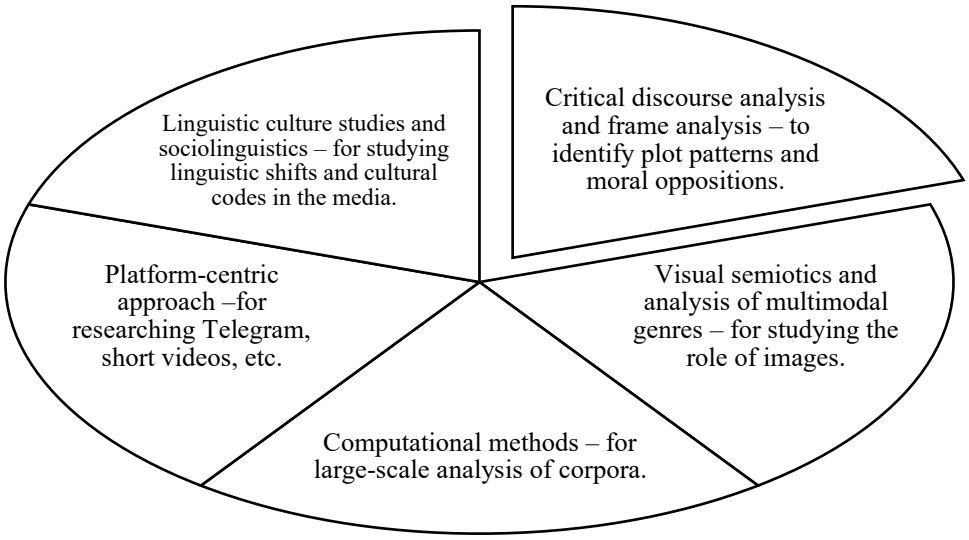

Figure1. Main approaches to the study of genre and narrative models of media texts in wartime
Source: created by the author on the basis of (Cap, 2023; Gruber, 2024; Kaneva, 2023; Khlevniuk & Noordenbos, 2025; Maathuis & Kerkhof, 2023; Papale & Solaroli, 2025; Schrijver, 2025; Young *et al*., 2025)

Contemporary research shows that genre and narrative structures in media texts during wartime are multi-layered, combining plot frameworks, semantic features, and linguistic and cultural signals (see Table 1).

Table 1. Genre and narrative models of media texts in wartime: main characteristics

Genre of media text	Narrative strategies	Semantic dominants	Linguistic and cultural markers
News report	Framing "aggressor – victim"; chronologization	Geopolitical opposition, moral assessment	Key concepts: "war", "resistance", "heroism"
Analytical article	Interpretation of causes and consequences	Temporality, politics of memory	Intellectual authorities, historical parallels
Visual materials (photos, videos)	Emotional dramatization, multimodal integration	Visual metaphor, symbolism	Iconic images: flag, symbolic cities, victims
Social media (Telegram, Twitter, Weibo)	Efficiency, mobilization, bot narratives	Information "quick genres", propaganda clichés	Use of memes, hybrid styles of speech
Brand and diplomatic narratives	Shaping the country's image, international positioning	Identity, sustainability, solidarity	Slogans, cultural codes ("Brave Like Ukraine")

Source: created by the author on the basis of (Cap, 2023; Gruber, 2024; Kaneva, 2023; Khlevniuk & Noordenbos, 2025; Locoman & Lau, 2024; Maathuis & Kerkhof, 2023; Papale & Solaroli, 2025; Schrijver, 2025; Young *et al*., 2025)

Table 1 shows that genre-narrative models of military media texts cover a wide range – from news framing to multimodal and brand strategies that combine semantic and cultural aspects. It demonstrates how the media space reflects war on multiple levels. Recent studies highlight that military media texts have several genre traits that alter communication practices and create new ways for society to engage with the information environment. To help understanding, the main features of these genres are summarized in Table 2.

Military media texts influence new communication methods, such as mobile operational updates, crowdsourcing networks, and international brand campaigns, as demonstrated in Table 2. This shows that genre features not only mirror reality but also actively shape social processes and promote social solidarity.

Table 2. Key genre features of military media texts and their impact on communication practices

Genre of media text	Main features	Examples of new communication practices
News reports	Promptness, hypertextuality, factuality	Fast distribution in the "breaking news" format, mobile updates
Analytical materials	Interpretation of events, historical parallels, criticality	Formation of public discussions, involvement of expert opinions
Visual media (photos, videos, infographics)	Emotionality, dramatization, multimodality	Emergence of visual symbols of war, memorialization, visual flash mobs
Social media	Brevity, interactivity, hybrid genres	Activation of digital volunteering, crowdsourcing of information
Platform genres (Telegram channels, short videos)	Efficiency, direct contact with the audience	Formation of "quick genres" of communication, digital communities of resistance
Brand and diplomatic narratives	Sloganization, strategic storytelling	International support campaigns, cultural diplomacy through branding

Source: created by the author on the basis of (Burda & Bundzíková, 2025; Cap, 2023; Kaneva, 2023; Locoman & Lau, 2024; Nagy-Béni, 2025; Oleinik, 2025; Papale & Solaroli, 2025; Schrijver, 2025; Young *et al*., 2025)

According to scientific studies, the narrative meanings in military media discourse are a combination of discursive, cultural, and social elements that create a unified system of war representations. The main categories of these strategies are shown in Figure 2.

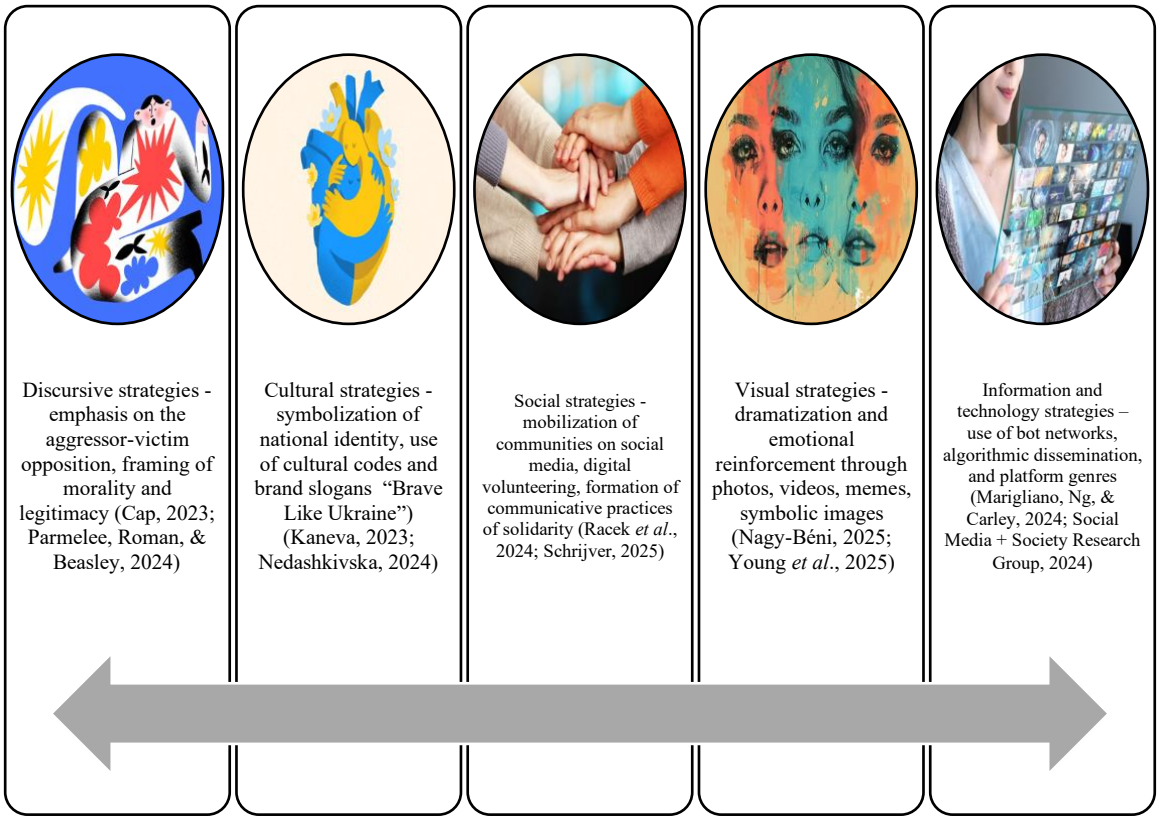

Figure 2. Narrative strategies of war representation in the media
Source: created by the author on the basis of (Cap, 2023; Kaneva, 2023; Marigliano *et al*., 2024; Nagy-Béni, 2025; Nedashkivska, 2024; Parmelee *et al*., 2024; Racek *et al*., 2024; Schrijver, 2025; Social Media + Society Research Group, 2024; Young *et al*., 2025)

As shown in Figure 2, narrative strategies in military media discourse are interconnected: discursive schemes create the framework for presenting events, cultural codes shape national and identity meanings, social practices support collective interaction, and visual and technological tools enhance communication effectiveness. This integration shows that modern military media discourse operates as a complex influence system. The semantic dominants of military media discourse are key elements that influence public awareness and help build national identity. Examples of these dominants are summarized in Table 3.

Table 3. Semantic dominants of military media discourse and their impact on public consciousness and national identity

Semantic dominant	Characteristics in media discourse	Role in the formation of public consciousness	Impact on national identity
Resistance and resilience	Narratives of heroism, invincibility, collective strength	Consolidates society around the idea of struggle	Reaffirms the image of a "fighting nation"
Victims of war	Emphasis on human tragedies, civilian casualties	Causes empathy, forms moral assessments	Deepens the sense of solidarity and memory
The enemy and the aggressor	Demonization of the enemy, opposition "friend or foe"	Legitimizes resistance and mobilizes support	Strengthens the sense of unity against an external enemy
National symbols	Use of the flag, anthem, cultural codes	Strengthens patriotism, creates a sense of pride	Becomes a marker of cultural identity
International support	Representation of allies, external solidarity	Supports a sense of inclusion in the global community	Positions Ukraine as a subject of international discourse
Language and culture	Emphasizing the importance of the Ukrainian language and traditions	Builds linguistic awareness and cultural resilience	Strengthens linguistic identity in the global context

Source: created by the author on the basis of (Burda & Bundzíková, 2025; Cap, 2023; Kaneva, 2023; Khlevniuk & Noordenbos, 2025; Krouglov, 2025; Nedashkivska, 2024; Racek *et al*., 2024; Young *et al*., 2025)

As shown in Table 3, the main themes of military discourse shape not only how information is organized in the media but also actively influence the development of collective awareness. They help mobilize society, unify the nation around ideas of resistance and solidarity, and reinforce the cultural and linguistic roots of Ukrainian identity on the global stage.

Linguistic and cultural paradigms in war coverage reflect how linguistic and cultural codes interact, directly shaping communication practices in the media. A summary of the main paradigms and their impacts is shown in Table 4.

Table 4. Linguistic and cultural paradigms of war coverage and their impact on the transformation of media practices

Linguistic and cultural paradigm	Key manifestations in the media	Impact on language practices	Impact on cultural practices
Language as a marker of identity	Strengthening the role of Ukrainian in the media and social networks	Increased use of the Ukrainian language (Racek *et al*., 2024)	Strengthening cultural identity through language
Symbolic codes of culture	Use of national symbols, slogans ("Brave Like Ukraine")	Enshrining new expressions and cultural words	Transmission of cultural codes to the international space (Kaneva, 2023)
Mythologizing and memory	Use of historical parallels, narratives about the past	Formation of discursive clichés	Construction of common memory and cultural myth (Khlevniuk & Noordenbos, 2025)
Intercultural interaction	Representation of Ukraine in global media	Integration of foreign language elements into public space	Dissemination of Ukrainian cultural codes to the outside (Oleinik, 2025)
Multimodality of culture	Combining texts, images, memes in communication	New hybrid language forms in social media	Visualization of cultural identity in the digital environment (Nagy-Béni, 2025; Young *et al*., 2025)

Source: created by the author based on (Kaneva, 2023; Khlevniuk & Noordenbos, 2025; Nagy-Béni, 2025; Oleinik, 2025; Racek *et al*., 2024; Young *et al*., 2025)

As shown in Table 4, the linguistic and cultural paradigm of war coverage transforms not only language but also cultural practices: it involves establishing the Ukrainian language as a marker of identity and promoting national symbols internationally. This demonstrates that contemporary media discourse is not just a communication tool but a powerful means of cultural representation. There is a linguistic and cultural paradigm in war coverage that involves the interaction of linguistic and cultural codes, which directly influence changes in communication practices within the media space. Table 5 summarizes the main paradigms and their effects.

Table 5. Linguistic and cultural paradigms of war coverage and their impact on the transformation of media practices

Linguistic and cultural paradigm	Key manifestations in the media	Impact on language practices	Impact on cultural practices
Language as a marker of identity	Strengthening the role of Ukrainian in the media and social networks	Increased use of the Ukrainian language (Racek *et al*., 2024)	Strengthening cultural identity through language
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Source: created by the author based on (Kaneva, 2023; Khlevniuk & Noordenbos, 2025; Nagy-Béni, 2025; Oleinik, 2025; Racek *et al*., 2024; Young *et al*., 2025)

Table 4 shows how linguistic and cultural ideas of war coverage change both language and practices: from introducing Ukrainian as an identity marker to sharing national symbols globally. This demonstrates that modern media discourse is not just a means of communication but also a powerful tool for cultural representation.

To improve the author's classification of genre and narrative models, it is advised to include a quantitative assessment of their prevalence in the media. This allows us to connect qualitative models with actual practices and identify trends in genre dynamics during wartime (see Figure 3). In our study, the authors analyzed 512 media texts, including news reports, analytical articles, visual materials, platform genres, and branded diplomatic content, collected from Ukrainian online media (Ukrinform, Ukrayinska Pravda) and social media (Telegram channels, Facebook) between January and December 2024. The genre was manually identified based on criteria considering form, narrative

strategies, and multimodality. Genre distributions are expressed as percentages, rounded to the nearest hundredth.

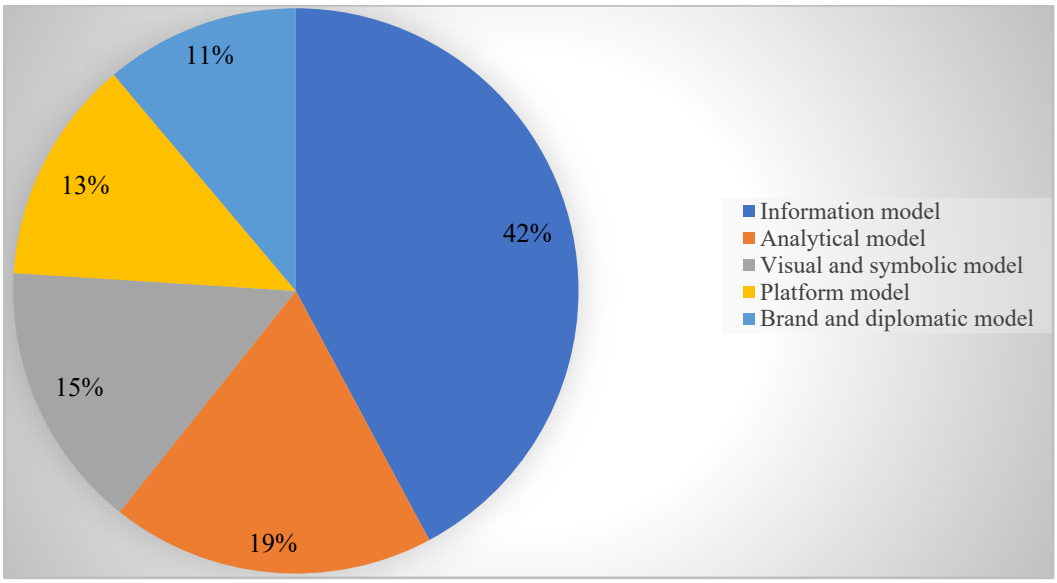

Figure 3. Distribution of genre and narrative models in the wartime media space (n = 512)
Source: created by the author

As Figure 3 illustrates, the informational model remains the most dominant at 42.17%, while the analytical model ranks second at 18.54%. Visual and symbolic forms constitute over 15%, and platform formats make up nearly 13%. The brand-diplomatic model, although the least common, accounts for more than 11% of texts, emphasizing the significant role of strategic communication. This quantitative overview complements the qualitative classification effectively, allowing us to compare different genres based on their prevalence and influence and to spot potential shifts over time.

5. DISCUSSION

The results showed that the genre-narrative models of military media texts include five main dimensions: discursive, visual, computational, platform, and linguistic-cultural. This supports the idea that modern media discourse has multiple aspects. Comparing these findings with previous studies shows both similarities and important differences. For example, the dominance of the information model (42.17%) matches Papale and Solaroli (2025), who pointed out the importance of news-type frames. At the same time, the emphasis on brand and diplomatic narratives (Kaneva, 2023) indicates a wider range of strategic communication than what is usually documented.

Some authors (Cap, 2023; Gruber, 2024; Parmelee *et al.*, 2024) emphasize the importance of geopolitical and moral frameworks, while others (Nedashkivska, 2024; Racek *et al.*, 2024) concentrate on cultural and linguistic changes, particularly the increasing use of Ukrainian. Our findings support the link between these processes, as the "aggressor-victim" narrative is reinforced by cultural codes and language. At the same time, several studies (Zollmann, 2024; Welker, 2025) criticize Western media for overlooking NATO's role and creating alternative myths, which are not always reflected in Ukrainian media. This creates space for opposition: while some researchers highlight universal models of

military discourse, our analysis reveals the uniqueness of the Ukrainian media context, driven by its internal mobilization function.

Similar contradictions can be observed in how visual strategies are interpreted: Young *et al*. (2025), Theisen (2025), and Nagy-Béni (2025) consider images important tools for dramatizing events, while others (Zecchinon & Standaert, 2025) highlight their potential to spread visual disinformation. Our findings suggest that the visual element is integrated across all genre models, but its impact depends on its combination with textual and cultural codes.

Thus, the study confirms that genre-narrative models of military media texts function as a complex system of representation in which plot frames, semantic dominants, and linguistic and cultural markers interact in a multimodal space. At the same time, the study is limited by the local nature of the sample (Ukrainian online media and social networks), which requires further cross-national research. Future studies should focus on combining humanitarian and digital approaches to fully explain the metamorphoses of media discourse and evaluate their long-term role in socio-cultural processes.

6. CONCLUSIONS

This paper shows that the genre and narrative models of military media texts have multiple dimensions, combining discursive, visual, platform, linguistic, and cultural strategies within a unified communication system. The findings mostly match expectations: the information model was dominant, but the relatively high presence of branded and diplomatic narratives was unexpected, emphasizing the increasing importance of strategic communication during wartime. An innovation in this work is the quantitative combination of qualitative classifications using an empirical cross-section, which helps monitor the changes in genre forms and their influence on mass perception. Practically, these findings could be useful in media education, journalism training, and public diplomacy, where cultural codes can act as tools for external communication. However, there are limitations to the review, mainly because the analysis mainly focused on Ukrainian sources, limiting the ability to fully examine the cross-national aspect of the media landscape. Future research should focus on comparative studies of different media systems, validate findings with larger datasets, and blend digital methods with humanitarian perspectives. Additionally, exploring the long-term effects of genre and narrative practices on identity creation and social unity during wartime offers a valuable area for further study.

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