



A decade of research on word formation in foreign language education: A scientometric mapping (2014–2024)

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Abstract

Word formation plays a crucial role in foreign language acquisition, enabling learners to expand their vocabulary and understand the meaning of unfamiliar words. However, a comprehensive understanding of the research landscape in this domain remains elusive. This study employed a scientometric approach to analyze the research landscape on word formation in foreign language teaching, utilizing data from the Scopus database spanning 2014 – 2024. Bibliographic and keyword analysis, facilitated by VOSviewer, was conducted on 240 documents to identify publication trends, major contributors, and thematic clusters. The findings reveal an escalating field, with a 333% increase in publications over the observed period and prominent contributions from journals such as “Russian Language Studies”, “Perspektivy Nauki i Obrazovania”, and “Xlinguae”. Four distinct thematic clusters were identified: (1) Cluster A (29.1%) encompassing foundational linguistic concepts and cognitive processes; (2) Cluster B (27.9%) focusing on pedagogical practices and learning processes; (3) Cluster C (23.3%) highlighting linguistic elements and acquisition challenges; and (4) Cluster D (19.8%) addressing the application and investigation of word formation knowledge. To some extent, this study provides an overview of recent research trends and informs future research directions in this crucial area of language learning and teaching.

Keywords: foreign language teaching, morphological study, research landscape, scientometric approach, thematic cluster, word formation

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Introduction

Word formation, the intricate system by which languages generate new words from existing ones (Aronoff, 2018; Plag, 2020a; Schmid, 2015), constitutes a pivotal domain within linguistic inquiry and plays a crucial role in foreign language acquisition. The ability to understand and apply word formation processes is essential for learners to expand their vocabulary, decipher the meaning of unfamiliar words, and achieve communicative competence in a foreign language. As learners encounter novel lexical items, their grasp of morphological structures and derivational patterns enables them to decode meaning, infer semantic relationships, and effectively manage linguistic challenges. Furthermore, knowledge of word formation empowers learners to express themselves with greater precision and nuance, contributing to enhanced fluency and communicative effectiveness. Correspondingly, the investigation of word formation in the context of foreign language teaching, as inspired by Ellis (2021) and Larsen-Freeman (2018), holds significant implications for both linguistic theory and pedagogical practice.

From a linguistic perspective (e.g., Bauer, 2019; Booij, 2020; Levin & Hovav, 2017), the study of word formation explains the processes by which languages evolve and adapt, providing insights into the creative potential of morphological processes and their role in shaping the lexicon. By examining how learners acquire and utilize word formation rules in a foreign language, researchers can gain a deeper understanding of the cognitive processes underlying language acquisition and the interplay between linguistic knowledge and language use. Moreover, investigations into the challenges and successes experienced by learners in mastering word formation can contribute to refining linguistic theories and models of language acquisition. From a pedagogical standpoint (e.g., Larsen-Freeman, 2015b, 2015a, 2017; Larsen-Freeman et al., 2024), research on word formation informs the development of effective instructional strategies and materials that promote vocabulary growth and language proficiency. By understanding the cognitive demands and learning processes associated with

word formation, educators can design targeted interventions that facilitate the acquisition and application of morphological knowledge. Furthermore, insights into the factors that influence learners' success in mastering word formation, such as individual differences, learning styles, and motivational factors, can inform differentiated instructions and personalized learning approaches (Ellis, 2024a; Panahi et al., 2024). Thus, the investigation of word formation in the context of foreign language teaching serves as a bridge between linguistic theory and pedagogical practice, contributing to both a deeper understanding of language and more effective language instruction.

Despite the acknowledged importance of word formation in foreign language learning or teaching, there remains a necessity for a conversant understanding of the research landscape in this domain. While numerous studies have explored specific aspects of word formation (e.g., Dietz, 2015; Müller et al., 2016; Ohnheiser, 2015; Olsen, 2019; Rainer, 2018), such as the acquisition of derivational morphology or the effectiveness of different instructional techniques (Ryabchikova et al., 2022; Sergeeva et al., 2021), to some extent, a data-driven overview of the field is deficient. A systematic analysis of the existing literature is crucial to identify key trends, major research foci, and potential knowledge gaps that warrant further investigation. Such an analysis can provide valuable insights into the evolution of research on word formation in foreign language teaching, highlight the contributions of influential scholars and institutions, and guide future endeavors.

Pervious research on word formation in foreign language teaching has encompassed a diverse range of topics, including the role of morphological awareness in vocabulary acquisition (e.g., Bian et al., 2022; Shen & Crosson, 2023; Tschichold & ten Hacken, 2015; Xue & Jiang, 2017), the effectiveness of explicit instruction in derivational morphology (e.g., Leontjev et al., 2023; Seiffert, 2015; Soboleva et al., 2022b, 2022a), and the influence of learners' first language on the acquisition of word formation processes (e.g., Deryabina & Liubimova, 2021; Ryabchikova et al., 2019; Wanying & Deryabina, 2024). However, these studies often focus on specific aspects of word formation, leaving a need for a broader perspective that encompasses the nature of this domain. This scientometric investigation addresses this gap by providing a data-driven analysis of the research landscape, encompassing publication trends, major contributors, and thematic clusters within the field. The urgency of this research is rooted in established linguistic and pedagogical theories. From cognitive perspective, theories such as *morphological awareness theory* (Jiang & Kuo, 2019; Kuo & Anderson, 2006) and *the dual-route cascaded model* (Coltheart, 2008; Grainger & Ziegler, 2011; Seidenberg et al., 2022) posit that learners with strong

morphological awareness can more effectively decoded and infer the meaning of unfamiliar words, which is a significant bottleneck for L2 learners. Furthermore, from a pedagogical standpoint, a data-driven understanding of the field is critical. Existing research, as noted, is often siloed, making it difficult for educators to identify best practices and the most impactful interventions. Specifically, this investigation seeks to answer the following research questions:

- (1) What are the major trends and patterns in research publications on word formation in foreign language teaching over the past decade (2014 – 2024)?
- (2) What are the prominent thematic clusters within this research domain?

Literature review

Word formation as a language phenomenon

Word formation, a central concern within the domain of morphology, encompasses the processes by which new words are created from existing ones (Berg, 2021; Booij, 2017; Plag, 2020b). This dynamic aspect of language reflects its inherent creativity and adaptability, allowing for the continuous expansion and refinement of the lexicon. From the perspective of morphological theory (Booij, 2015; Körtvélyessy & Štekauer, 2020), word formation is viewed as a rule-governed system, operating on principles of combination and modification to generate novel lexical items. These processes can involve affixation (Plag, 2016), where prefixes or suffixes are attached to a base word, as in “unhappy” or “helpful”; compounding (Hüning & Booij, 2014), where two or more existing words are combined, as in “blackboard” or “sunstroke”; conversion (Valera, 2015), where a word changes its grammatical category without any overt morphological change, as in the use of “google” as both a noun and a verb; and other less common processes like blending (Fradin, 2015) (e.g., “smog” from “smoke” and “fog”) and clipping (Steinhauer, 2015) (e.g., “flu” from “influenzas”).

The study of word formation delves into the formal properties of these processes, examining the types of morphemes involved, their combinatory possibilities, and the semantic and syntactic consequences of their application (Lieber, 2015). Furthermore, morphological theory explores the constraints and regularities that govern word formation, seeking to uncover the underlying principles that shape the structure and evolution of the lexicon (Bauer et al., 2015). Hence, understanding these fundamental principles of word formation is crucial for the present study, as it provides the theoretical framework for analyzing how novel lexical items are generated and integrated in foreign language teaching.

Foreign language teaching in the field of second language acquisition (SLA)

Foreign language teaching, a multifaceted endeavor situated within the broader field of SLA, encompasses the pedagogical practices and theoretical principles aimed at facilitating the acquisition of a language other than the learner's native tongue (Ellis, 2024b). From the perspective of SLA theory (Atkinson et al., 2016; Larsen-Freeman & Long, 2014), foreign language teaching is viewed as a complex process that involves not only the transmission of linguistic knowledge but also the creation of opportunities for learners to engage in meaningful communication and develop their communicative competence. Various theoretical frameworks inform foreign language teaching, including cognitive theories that emphasize the role of mental processes such as attention, memory, and categorization (Poehner & Swain, 2016); sociocultural theories that highlight the importance of social interaction and collaborative learning (Lantolf et al., 2018; McKinney & Norton, 2024; Norton & Lauwo, 2023); and interactionist perspectives that underscores the role of negotiation of meaning and feedback in language development (Long, 2017, 2020).

Furthermore, the theory of Universal Grammar (UG), as proposed by Chomsky (1959, 2013, 2021) (see also Chomsky & Miller, 1958; Cipriani, 2021), posits the existence of an innate language faculty that provides learners with a set of underlying principles common to all languages. This innate capacity, according to UG proponents, guides language acquisition and constrains the possible forms that grammars can take. While the role and accessibility of UG in foreign language learning remain debated (Chomsky, 2022; Roberts et al., 2023; Watumull & Chomsky, 2020), its potential influence on the acquisition of syntax and morphology cannot be disregarded. These theories provide insights into the factors that influence language learning and inform the design of effective instructional approaches, emphasizing the importance of communicative activities, authentic materials, and opportunities for learners to use the target language in meaningful contexts, including utilizing word formation processes of the target language. Therefore, understanding these theoretical underpinnings of foreign language teaching is vital for the present study, as it helps contextualize the pedagogical trends and research focuses identified in our scientometric mapping of word formation research from 2014 to 2024.

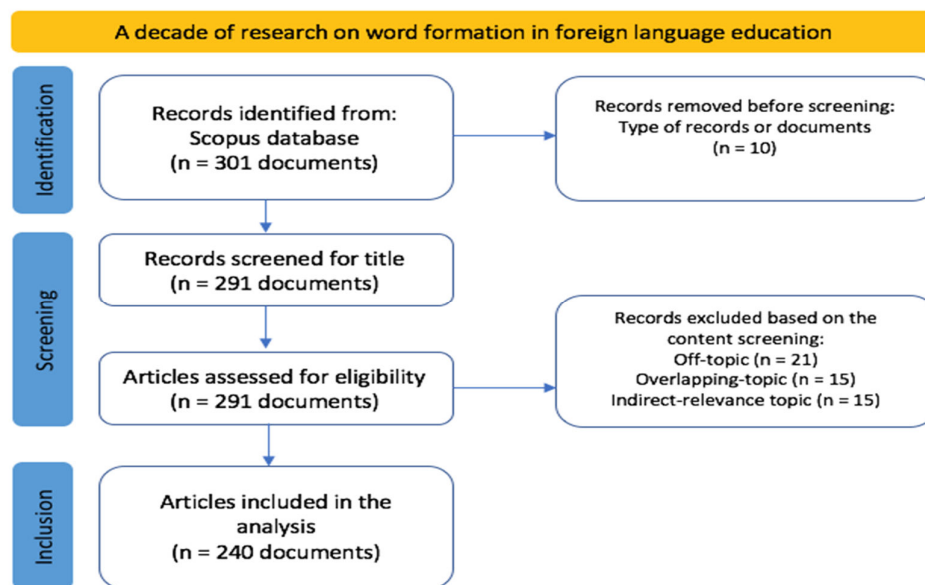
Method***Design***

This study employed a scientometric approach to investigate the research landscape of word formation in foreign language teaching spanning 2014 to 2024

(see Figure 1). This specific decade was chosen because it represents a period of significant technological and pedagogical transformation in the field of applied linguistics, i.e., foreign language education. The rise of digital learning platforms (Alasal, 2025), the increased accessibility of large linguistic corpora (Vyatkina, 2020), and shifts in communicative language teaching methodologies (Hasumi & Chiu, 2024) have profoundly influenced research on word formation. Focusing on this recent timeframe ensures the analysis is highly relevant. Furthermore, scientometrics, as defined by Aria and Cuccurullo (2017) and Hood and Wilson (2001), involves the quantitative analysis of scientific and scholarly literature to identify patterns, trends, and relationships within a specific domain of knowledge. This methodology allows for an empirical and objective assessment of research activity, providing insights into the evolution and structure of a given field (van Raan, 2019). In this study, scientometric analysis was employed to examine publication trends, identify key contributors, and uncover thematic clusters within the research on word formation in foreign language teaching.

Figure 1

Stages of the present study



Data collection

The data for this study were retrieved from the Scopus database. Scopus was chosen due to its extensive coverage of academic publications in various disciplines, including linguistics and education, which are relevant to the study of word formation in foreign language teaching. While other reputable databases

like Web of Science are also widely used, the decision to focus solely on Scopus was a strategic choice to ensure data consistency and manageability. Scopus provides a robust, curated collection of literature, making it particularly well-suited for this specific research area. This singular focus prevents data duplication and allows for a more streamlined and coherent analysis. A comprehensive search query was formulated to identify relevant publications within the specified timeframe (2014 – 2024). The query incorporated a combination of keywords and search operators to ensure the inclusion of articles that explicitly addressed word formation processes in the context of foreign language teaching or learning. The search query was as follows:

“(TITLE-ABS-KEY (word AND formation) OR TITLE-ABS-KEY (derivational AND morphology) OR TITLE-ABS-KEY (compounding AND words) OR TITLE-ABS-KEY (affixation) OR TITLE-ABS-KEY (blending AND words) OR TITLE-ABS-KEY (clipping AND words) OR TITLE-ABS-KEY (abbreviations AND acronyms) OR TITLE-ABS-KEY (word AND conversion) AND TITLE-ABS-KEY (foreign AND language AND teaching) OR TITLE-ABS-KEY (foreign AND language AND studies) OR TITLE-ABS-KEY (foreign AND language AND learning) OR TITLE-ABS-KEY (learn AND a AND foreign AND language) OR TITLE-ABS-KEY (study AND of AND foreign AND languages) OR TITLE-ABS-KEY (teaching AND foreign AND languages) OR TITLE-ABS-KEY (foreign AND languages AND pedagogy)) AND PUBYEAR > 2013 AND PUBYEAR < 2025”

This query yielded an initial pool of 301 documents. Inclusion criteria stipulated that publications must explicitly address word formation processes within the context of foreign language teaching and learning, while exclusion criteria eliminated publications that were not peer-reviewed articles or book chapters, ensuring the quality and relevance of the dataset. The resulting corpus of 240 documents provided a solid foundation for the subsequent scientometric analysis.

Data analysis

The collected data were analyzed using a combination of bibliographic analysis and keyword analysis, facilitated by the VOSviewer (1.6.20) software (van Eck & Waltman, 2023). The first phase of analysis provided a macroscopic view of the research landscape, highlighting key trends and influential players in the research topic. Keyword analysis, on the other hand, involved extracting and analyzing the keywords associated with each publication to identify prominent themes and research foci. VOSviewer, a software tool designed for constructing and visualizing bibliometric networks (van Eck & Waltman, 2010), was

employed to create a term co-occurrence map based on the title and abstract fields of the collected publications. This map provided a visual representation of the relationships between different keywords, revealing clusters of terms that represent distinct thematic areas. The following parameters were applied in VOSviewer to generate the keyword map: full counting method to account for all occurrences of each term (total: 8,038 terms); a minimum occurrence threshold of 15 to ensure the inclusion of only the most salient terms (154 terms meet the threshold); and a relevance score calculation to select the 60% most relevant terms, resulting in an initial selection of 92 terms. After second refinement process, the final keyword map comprised 86 terms, providing a clear and concise representation of the key thematic clusters within this research domain.

Findings

This section presents the key findings derived from the scientometric analysis of word formation in foreign language teaching. Utilizing Scopus data spanning 2014 – 2024, this study examines the landscape of research in this domain. The analysis encompasses several dimensions, including the chronological distribution of publications, providing insights into the temporal trends and growth trajectory of scholarly output. It further identifies the major contributors to scholarly discourse, highlighting the influential scholars and the institutional distribution of publications. Additionally, the analysis explores the geographic distribution of research. Furthermore, it investigates the research funding sources supporting scholarly endeavors in this area. The study also delves into the distribution of subject areas. Finally, a thematic analysis of keywords is conducted to uncover prevalent research themes and emerging trends, offering an alternative understanding of the intellectual structure of this research domain.

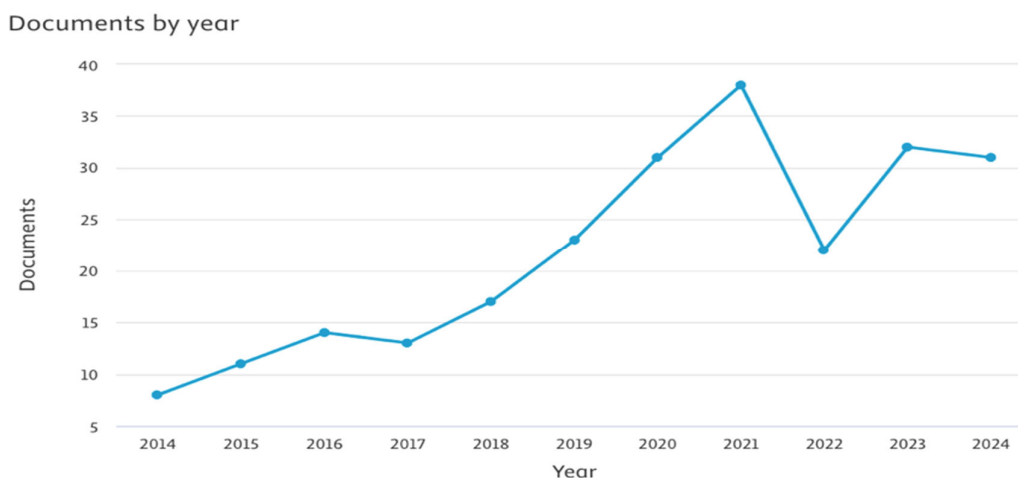
Chronological distribution of publications

The chronological distribution of publications pertaining to ‘word formation in foreign language teaching’ reveals a burgeoning field of inquiry. As illustrated in Figure 2, scholarly output in this domain has exhibited a general upward trajectory over the past decade (2014 – 2024), indicating a growing interest in the intersection of morphology, pedagogy, and second language acquisition. While the initial years (2014 – 2017) witnessed a relatively modest publication rate, a noticeable surge in scholarly activity is observed from 2018 onwards, with a particularly pronounced increase between 2019 and 2021. This period suggests a heightened recognition of the crucial role word formation processes play in foreign language learning and instruction. However, the slight dip observed in 2022, followed by a subsequent rise in 2023 and a plateauing in 2024, points to

the nature of research trends and the potential influence of external factors, such as a shift in funding priorities or pedagogical paradigms.

Figure 2

Chronological distribution of publications



A closer examination of the data reveals a mean annual publication rate of 23.7 documents (rounded to 24), with a standard deviation of 8.2, reflecting some variability in yearly output. The peak publication year, 2021, witnessed 39 documents, representing a substantial increase from the initial 9 documents published in 2014. This represents a 333% increase over the observed period, underscoring the growing momentum in this research area. Furthermore, the median publication count stands at 23.5 (rounded to 23), indicating that half of the years within the analyzed period exceeded this number of publications. At least, these quantitative insights provide an empirical foundation for understanding the evolving trajectory of research on word formation in foreign language teaching.

Major contributor to scholarly discourse

Analysis of the publication landscape reveals a diverse range of sources contributing to the discourse on word formation in foreign language teaching. However, certain journals emerge as prominent platforms for disseminating scholarship in this domain. As depicted in Figure 3, “Perspektivy Nauki i Obrazovania” (Q-2|SJR: 0.16) and “Russian Language Studies” (Q-1|SJR: 0.47) demonstrate a sustained presence throughout the analyzed period (2014 – 2024), suggesting their consistent engagement with this area of inquiry. Furthermore, the emergence of “Xlinguae” (Q-2|SJR: 0.24) in 2019, with a notable increase in

publications in subsequent years, signals its growing prominence as a venue for research on word formation in language education. This diversification of publication outlets reflects the expanding scope of this field of inquiry, encompassing perspectives from linguistics, pedagogy, and language acquisition.

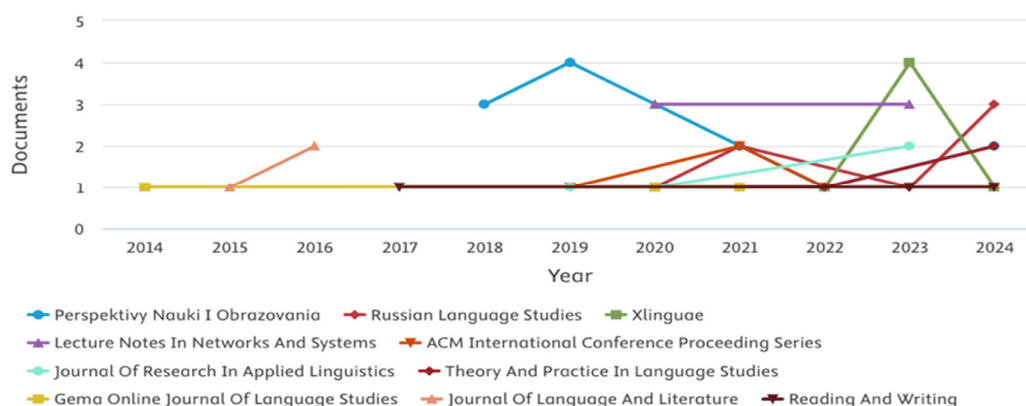
Figure 3

Major-contributor publisher

Documents per year by source

Compare the document counts for up to 10 sources.

[Compare sources and view CiteScore, SJR, and SNIP data](#)



A quantitative examination of publication count across different sources provides further insights into their respective contributions. “Perpektiv Nauki i Obrazovania” leads with a total of 11 publications over the decade, followed by “Russian Language Studies” with 7 publications. “Xlinguae,” despite its later entry, demonstrates a rapid increase, accumulating 6 publications between 2019 and 2024. Interestingly, while some sources, such as “Lecture Notes in Networks and Systems” (Q-4|SJR: 0.17) and “Journal of Research in Applied Linguistics” (Q-2|SJR: 0.18), maintain a consistent, albeit modest, output, others exhibit sporadic contributions. This variability underscores the dynamic nature of scholarly communication and the evolving preferences of researchers in disseminating their work. Overall, the data indicate a healthy ecosystem of publication outlets supporting the advancement of knowledge in this research field.

Influential scholars in the research field

Analysis of the authorship reveals a network of influential scholars who have significantly contributed to the research on word formation in foreign language teaching. As illustrated in Figure 4, authors such as Müller, P. O., Ohnheiser, I.,

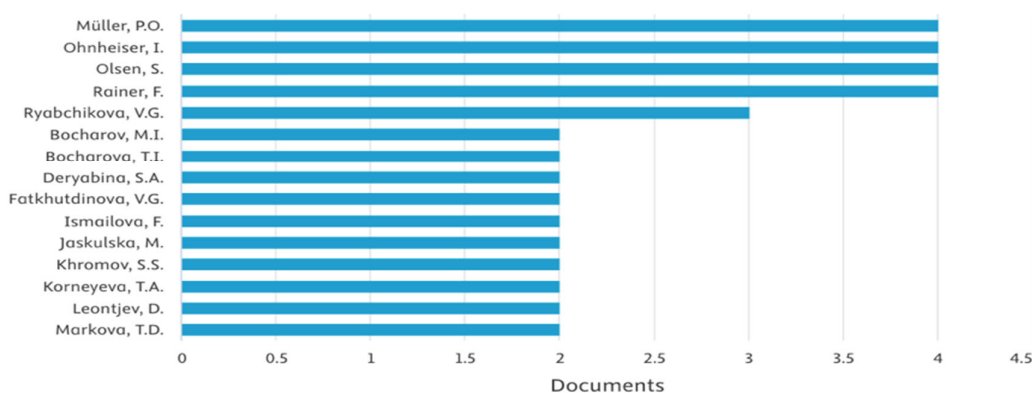
Olsen, S., and Rainer, F. emerge as prolific contributors, demonstrating a sustained research interest in this domain. Their consistent publication record suggests a deep engagement with the intricacies of morphological processes in second language acquisition and pedagogy. Furthermore, the presence of scholars like Ryabchikova, V. G., Bocharova, M. I., and Deryabina, S. A. underscores the collaborative nature of this field, with researchers engaging in joint efforts to advance knowledge and understanding.

Figure 4

Influential scholars in the research field

Documents by author

Compare the document counts for up to 15 authors.



Quantitative analysis of authorship patterns provides further insights into individual contributions. Müller, P. O., Ohnheiser, I., Olsen, S., and Rainer, F. each have authored 4 publications within the analyzed period, highlighting their substantial impact on the field. Ryabchikova, V. G. follows closely with 3 publications, while the remaining scholars in Figure 4 have each contributed 2 publications. These figures indicate a core group of researchers driving the advancement of knowledge in this area. Furthermore, the data reveal a mean publication count of 2.5 documents (rounded to 2) per author, with a standard deviation of 0.8, suggesting a relatively consistent level of productivity among the identified scholars. In sum, this analysis underscores the significant role played by these individuals in shaping the research landscape of word formation in foreign language teaching.

Institutional distribution of publications

According to the result of institutional analysis, as depicted in Figure 5, a diverse array of institutions contributed to scholarly discourse in this domain. Kazan Federal University emerges as a leading research hub, demonstrating a

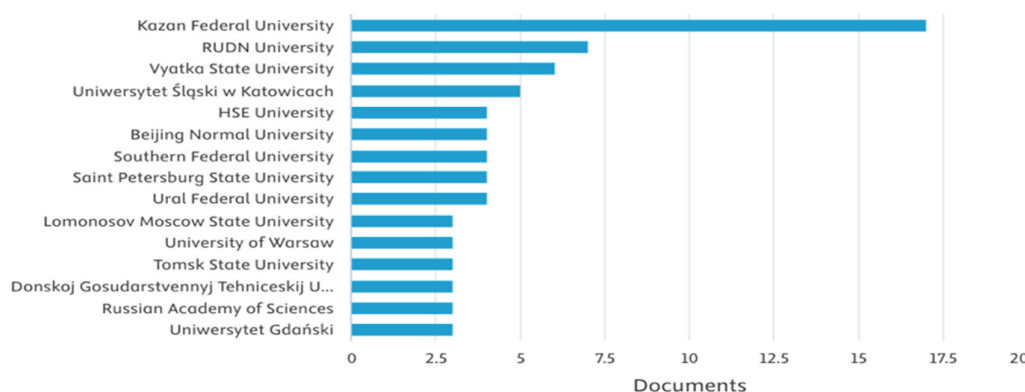
significant concentration of scholarly output. Furthermore, the prominent contributions from RUDN University, Vyatka State University, and Uniwersytet Śląski w Katowicach underscore the global nature of this field. The presence of both established and emerging institutions highlights the dynamic interplay between established research traditions and novel perspectives in this evolving area of inquiry.

Figure 5

Institutional distribution of publications

Documents by affiliation

Compare the document counts for up to 15 affiliations.



Quantitative analysis of institutional contributions reveals a concentration of research activity within a select group of institutions. Kazan Federal University leads with 19 publications, significantly surpassing other institutions. RUDN University and Vyatka State University follow with 9 and 8 publications, respectively. The remaining institutions in Figure 5 exhibit a relatively even distribution of output, ranging from 3 to 6 publications each. This pattern suggests a core-periphery structure, with a few institutions acting as major contributors while others play a supporting role. The mean publication count per institution is 5.7 (rounded to 6), with a standard deviation of 4.1, reflecting the variability in research output across institutions. These findings provide a depiction of the institutional landscape underpinning research on word formation in foreign language teaching.

Geographic distribution of research

Analysis of the geographic distribution provides a compelling visualization of the global reach of research on word formation in foreign language teaching. As illustrated in Figure 6, scholarly contributions emanate from a diverse range of

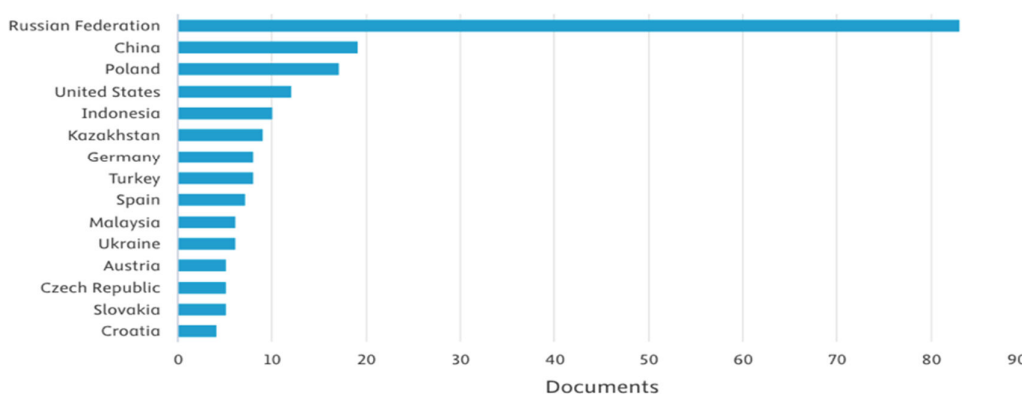
countries, underscoring the international relevance of this field. The Russian Federation emerges as the dominant contributor, accounting for 85 publications, which constitutes 36.1% of the total scholarly output during the analyzed period. This significant contribution can be attributed to the robust linguistic tradition within the country and a pronounced focus on language pedagogy. Following the Russian Federation, China and Poland occupy prominent positions with 21 (8.9%) and 18 (7.6%) publications, respectively, indicating growing research activity in these regions.

Figure 6

Geographic distribution of research

Documents by country or territory

Compare the document counts for up to 15 countries/territories.



Further analysis reveals a long-tailed distribution, with the remaining countries contributing a smaller, yet noteworthy, number of publications. The United States, for instance, accounts for 13 publications (5.5%), while Indonesia contributes 10 (4.2%). This pattern suggests that while research on word formation in foreign language teaching is concentrated in certain geographic regions, it nonetheless enjoys a global presence. The mean publications count per country is 8.1 (rounded to 8), with a standard deviation of 17.7 (rounded to 18), reflecting the considerable variation in research output across different countries. This variability can be attributed to factors such as research funding availability, institutional support, and the overall emphasis on language education within different national contexts.

Research funding sources

Investigating the funding landscape provides valuable insights into the support structure underpinning research on word formation in foreign language teaching. As depicted in Figure 7, a diverse array of funding sponsors contributes

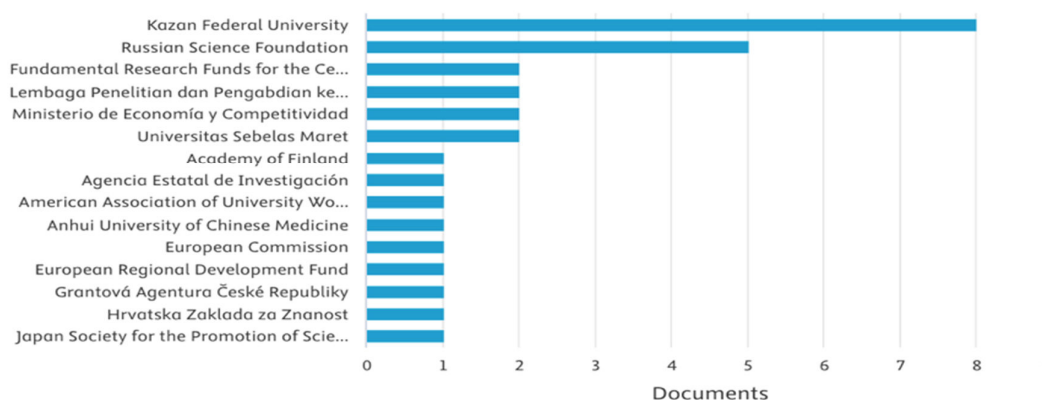
to scholarly endeavors in this domain. Kazan Federal University emerges as a major funding source, indicating its commitment to fostering research in this area. This internal funding mechanism highlights the institution's dedication to advancing knowledge and supporting its researchers. Furthermore, the prominent role of the Russian Science Foundation underscores the national-level support for research in this field within the Russian Federation. The presence of other funding bodies, such as the Fundamental Research Funds for the Central Universities and the Lembaga Penelitian dan Pengabdian Masyarakat, Universitas Riau, Indonesia, reflects the global significance of this research area.

Figure 7

Research funding sources

Documents by funding sponsor

Compare the document counts for up to 15 funding sponsors.



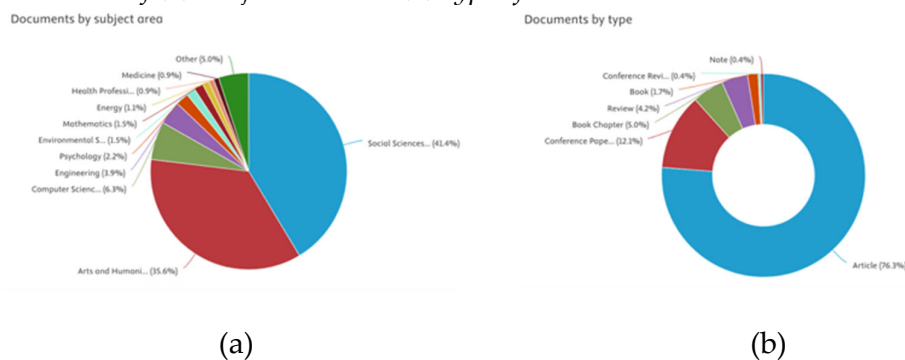
Quantitative analysis of funding sources reveals that Kazan Federal University provided support for 8 publications, indicating a substantial investment in this research area. The Russian Science Foundation follows closely with 5 funded publications, while the remaining sponsors have supported between 1 and 3 publications each. This distribution suggests a combination of concentrated support from key institutions and a broader network of funding agencies contributing to the advancement of knowledge in this field. The mean number of publications per funding sponsor is 2.3 (rounded to 2), with a standard deviation of 2.1, reflecting the variability in funding contributions. These findings underscore the nature of research funding in this domain, with support originating from both national and international sources, as well as from both public and institutional agencies.

Distribution of subject area

The distribution of subject areas represented in the publications reveals the specific characteristics of research on word formation in foreign language teaching. As depicted in Figure 8(a), while Social Sciences (45.9%) and Arts and Humanities (26.4%) constitute the predominant subject areas, contributions also emerge from fields such as Medicine (3.8%), Health Sciences (3.4%), and Environmental Science (3%). This diversity highlights the interdisciplinary nature of this research domain within a narrow research topic or specific type of analysis, drawing upon insights from linguistics, pedagogy, psychology, and cognitive science, among others related disciplines. The inclusion of publications classified under “Other” (3.4%) further underscores the breadth of perspectives contributing to this field of research. This distribution emphasizes the need for continuing the collaborative efforts across disciplines to comprehensively understand the complexities of word formation in foreign language learning and instruction.

Figure 8

Distribution of (a) subject area and (b) type of documents



Furthermore, as demonstrated in Figure 8(b), articles constitute the dominant publication type, comprising 76.8% of the total output. This preference for the article format underscores the emphasis on original research and empirical investigations within this field. While conference papers (8.1%) and book chapters (5.1%) also contribute to the dissemination of knowledge, their proportion remains comparatively modest. The presence of conference reviews (3.8%), notes (3.4%), and books (2.5%) further diversifies the publication landscape, albeit representing a smaller segment of scholarly output. This distribution reflects the diverse avenues through which researchers disseminate their findings, with a clear emphasis on peer-reviewed articles as the primary mode of scholarly communication.

Thematic analysis of the most occurring terms

Thematic analysis of terms, based on their co-occurrence within the corpus of publications (minimum number of occurrences of a term: 15), reveals distinct clusters representing salient research themes in the domain of word formation in foreign language teaching. As detailed in Table 1, four primary clusters (A, B, C, and D) emerge, each capturing a significant portion of the keywords and exhibiting unique thematic foci. Cluster A, the most prevalent (29.1%), encompasses terms related to fundamental linguistic concepts and cognitive processes involved in language learning. Cluster B (27.9%) centers on pedagogical practices and the learning environment. Cluster C (23.3%) delves into specific aspects of word formation and language acquisition. Lastly, Cluster D (19.8%) focuses on the analysis and application of word formation knowledge. These clusters collectively delineate the key research areas within this research field, demonstrating an approach that integrates linguistic inquiry, pedagogical considerations, and cognitive processes in the investigation of word formation in foreign language contexts.

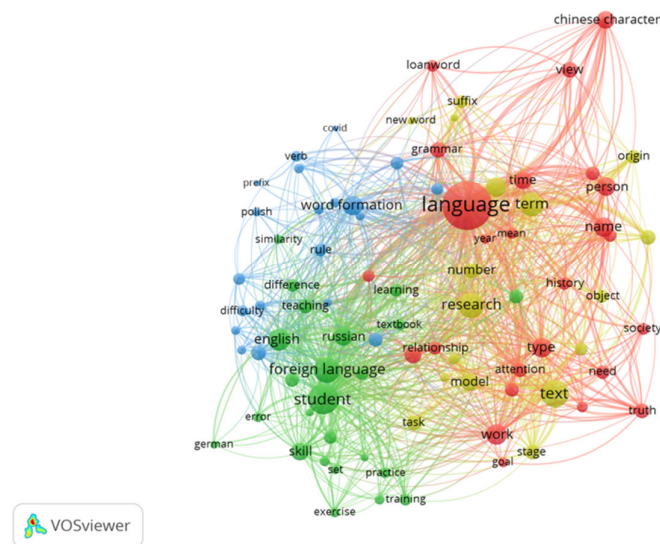
Table 1

Thematic clusters based on the co-occurrence of terms

No.	Cluster	N	(%)	Color in Figure 9	Itemization
1.	A	25	29.1	Red	grammar; language; loanword; pronunciation; relationship; attention; category; type; area; interpretation; knowledge; name; person; place; society; goal; Chinese character; mean; need; time; truth; view; work; year; history
2.	B	24	27.9	Green	foreign language; training; textbook; teaching; teacher; student; ability; skill; education; practice; methodology; learning; exercise; error; effectiveness; similarity; difference; culture; application; account; set; Russian; German; English
3.	C	20	23.3	Blue	word formation; verb; syntax; rule; prefix; phrase; noun; native language; learner; acquisition; accuracy; difficulty; frequency; degree; perspective; child; dyslexia; covid; country; Polish
4.	D	17	19.8	Yellow	translation; transformation; text; terminology; term; new word; suffix; task; stage; research; participant; part; origin; object; number; model; mechanism

Moreover, the network visualization provides a compelling representation of the interconnectedness of key terms within the corpus of publications on word formation in foreign language teaching. As depicted in Figure 9, “language” emerges as the central node, highlighting its pivotal role in this research domain. The strong connections between “language” and terms such as “teaching,” “foreign language,” and “learning” underscore the nature of this field, encompassing linguistic, pedagogical, and cognitive dimensions. Furthermore, the clustering of related terms, such as “prefix,” “suffix,” and “word formation,” indicates a focus on specific morphological processes. The prominence of terms like “student,” “skill,” and “error” suggests a concern with the learner’s perspective and the challenges they encounter. Overall, this network visualization offers a visual synthesis of the key themes and concepts that permeate research on word formation in foreign language teaching.

Figure 9
Network visualization of the most co-occurrence terms



Particularly, Cluster A, the most prevalent thematic cluster identified in the key terms' analysis, representing 29.1% of the total terms extracted from the corpus, visually represented by the red nodes in Figure 9, encompasses a range of terms associated with fundamental linguistic concepts and cognitive processes dimensions relevant to language learning. The 25 keywords within this cluster reflect a notable scope, encompassing areas such as "grammar," "language," "loanwords," "pronunciation," "relationships," "attention," "categorization," "interpretation," and "knowledge." This pattern suggests that Cluster A captures

a foundational layer of concepts and processes that underpin the study of word formation in foreign language contexts.

Further examination of the terms within Cluster A reveals potential sub-clusters based on semantic relationships and shared conceptual domains. One discernible sub-cluster (A.1) centers on core linguistic elements, including “grammar,” “language,” “loanword,” and “pronunciation,” suggesting a focus on the structural and phonetic aspects of language. Another sub-cluster (A.2) revolves around cognitive processes involved in language learning, encompassing terms like “attention,” “interpretation,” and “knowledge.” Additionally, a sub-cluster (A.3) related to social and cultural dimensions emerges, comprising terms such as “society,” “Chinese character,” and “history.” These sub-clusters highlight the specific tendency of Cluster A, encompassing not only linguistic elements but also the cognitive and socio-cultural factors that influence language learning and word formation processes.

In addition to Cluster A, Cluster B, the second most prevalent thematic cluster, represents 27.9% of the total terms extracted from the publications on word formation in foreign language teaching (2014 – 2024). This cluster, visually represented by the green nodes in Figure 9, predominantly encompasses terms related to pedagogical practices, learning processes, and the specific context of foreign language instruction. The 24 key terms within this cluster highlight facets of the teaching and learning environment, including “foreign language,” “training,” “textbooks,” “teaching,” and the “application of knowledge.” This thematic focus suggests that Cluster B captures the practical and applied aspects of word formation research, emphasizing its relevance to classroom instruction and language acquisition.

A closer examination of terms within Cluster B reveals several potential sub-clusters. One discernible sub-cluster (B.1) revolves around the key actors and resources involved in foreign language education, surrounding terms such as “foreign language,” “teaching,” “teacher,” “student,” and “textbook.” Another sub-cluster (B.2) centers on the learning process itself, including terms like “training,” “ability,” “skill,” “education,” “practice,” “methodology,” “learning,” and “exercise.” Furthermore, a sub-cluster (B.3) related to the evaluation and outcomes of language emerges, comprising terms like “error,” “effectiveness,” “similarity,” “difference,” and “application.” Interestingly, the inclusion of specific languages (“Russian,” “German,” “English”) within this cluster suggests a focus on empirical studies investigating word formation in these languages. These sub-clusters collectively demonstrate the characteristic of Cluster B, concerning pedagogical practices, learning process, learning evaluation, and specific language teaching contexts.

Figure 10



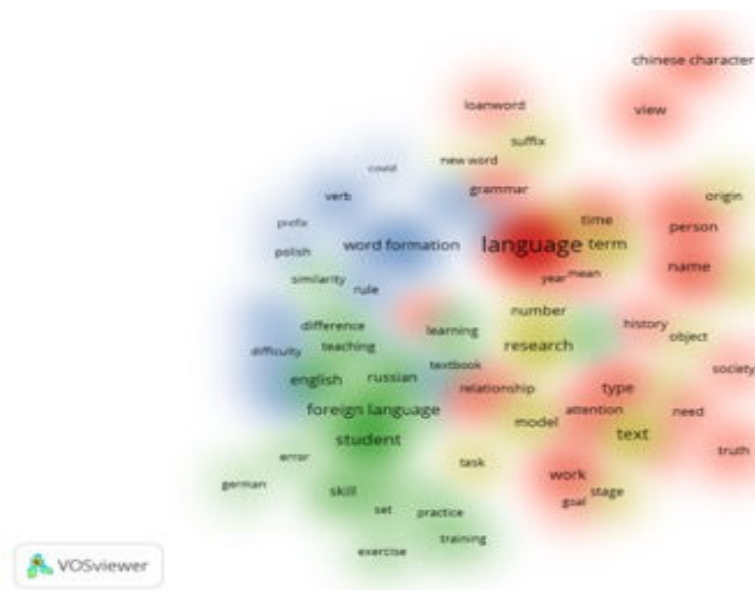
Moreover, Table 1 also presents a detailed analysis of Cluster C, the third most prevalent thematic cluster identified in the key terms' analysis, representing 23.3% of the total terms extracted from the analyzed corpus. This cluster, visually represented by the blue nodes in Figure 9, primarily encompasses terms related to specific linguistic elements, the process of language acquisition, and individual learner characteristics. The 20 keywords within this cluster highlight specific facets of word formation and its associated challenges, including terms such as "word formation," "verb," "syntax," "rule," "prefix," "phrase," "noun," "native language," "learner," "acquisition," "acquisition," "accuracy," "difficulty," "frequency," and "degree." This thematic focus suggests that Cluster C captures the intricacies of morphological processing and its role in second language development, emphasizing the cognitive demands and individual differences inherent in this process.

A subsequent consideration of the terms within Cluster C reveals potential sub-clusters based on shared semantic domains and conceptual associations. One prominent sub-cluster (C.1) revolves around the core components of word formation, encompassing terms such as “word formation,” “verb,” “syntax,” “rule,” “prefix,” “phrase,” and “noun.” Another sub-cluster (C.2) centers on the process of language acquisition and its associated challenges, including terms like “native language,” “learner,” “acquisition,” “accuracy,” “difficulty,” “frequency,” and “degree.” Interestingly, the inclusion of terms like “child,” “dyslexia,” and “COVID” suggests an emerging focus on specific learner

populations and the impact of contextual factors on language acquisition. Furthermore, the presence of “country” and “Polish” (C.3) may indicate research exploring cross-linguistic variations in word formation or studies specifically focusing on the specific language. These sub-clusters collectively demonstrate the feature of Cluster C, encompassing not only the linguistic underpinnings of word formation but also the cognitive processes, individual differences, and contextual factors that influence its acquisition in foreign language learning.

Figure 11

Density visualization of the most co-occurrence terms



Lastly, Table 1 also provides a detailed analysis of Cluster D, the fourth and final thematic cluster identified in the keyword analysis, representing 19.8% of the total keywords extracted from the publications on word formation in foreign language teaching. This cluster, visually represented by the yellow nodes in Figure 9, primarily encompasses terms related to the application and investigation of word formation knowledge, with a particular focus on research methodologies and analytical approaches. The 17 keywords within this cluster highlight various facets of linguistic inquiry, including terms such as "translation," "transformation," "text," "terminology," "term," "new word," "task," "research," "participant," and "mechanism." This thematic focus suggests that Cluster D captures the analytical and methodological dimensions of word formation research, emphasizing the processes involved in examining and understanding morphological phenomena in language learning.

A closer examination of the terms within Cluster D reveals potential sub-clusters based on shared semantic domains and conceptual associations. One prominent sub-cluster (D.1) revolves around the analysis and manipulation of linguistic units, encompassing terms such as “translation,” “transformation,” “text,” “terminology,” “term,” “new word,” and “suffix.” Another sub-cluster (D.2) centers on the research process itself, including terms like “task,” “stage,” “research,” and “participant.” Furthermore, a sub-cluster (D.3) focused on theoretical frameworks and analytical tools is evident, encompassing terms such as “number,” “model,” and “mechanism.” These sub-clusters collectively demonstrate the nature of Cluster D, encompassing not only the application of word formation knowledge but also the research methodologies, analytical tools, and theoretical frameworks employed in investigating word-formation.

Discussion

The present scientometric investigation has provided an overview of the research landscape concerning word formation in foreign language teaching, spanning the years 2024 to 2024. Through bibliographic analysis and keyword analysis, this study has identified key publication trends, major research contributors, and prominent thematic clusters within this domain. The findings reveal a dynamic and evolving field, as implied in Long's (2016) previous work, characterized by increasing scholarly interest, a diverse range of contributing institutions and countries, and a specific thematic structure alongside several potential research questions for subsequent inquiry. This dynamic nature is further evidenced by the overlay visualization in Figure 10 and the density visualization in Figure 11. Figure 10 illustrates the temporal evolution of key terms. Notably, terms such as “model”, “text,” and “task” exhibit a stronger presence in more recent publications. However, Figure 11 illustrates the density and interconnectivity of key terms. The prominent cluster surrounding “language” and “word formation” suggests a core focus on the linguistic and cognitive aspects of this domain. Moreover, the interconnectedness of terms related to teaching, learning, and research highlights the characteristic of this field, encompassing pedagogical considerations. This discussion will elaborate on these findings.

Regarding thematic clustering, Cluster A (*linguistic and cognitive foundations*), representing the largest thematic cluster, encompasses keywords related to fundamental linguistic concepts and cognitive processes. This cluster underscores the importance of considering not only the structural aspects of language but also the cognitive factors that influence language learning. As Khezlou and Ellis (2017) argue, vocabulary acquisition, including word formation, is a complex process that involves not only memorization but also the

development of deep understanding and the ability to apply knowledge in different contexts. The prominent terms like “attention” and “interpretation” in Cluster A align with Schmidt’s (1990) Noticing Hypothesis, which emphasizes the role of conscious attention in language learning (Robinson et al., 2013). However, the inclusion of terms like “society” and “history” suggests a broader perspective, acknowledging the influence of socio-cultural factors on language use and learning, as highlighted by Sharifian (2017). There is a need to examine the relationship between these linguistic, cognitive, and socio-cultural dimensions, exploring how they interact to shape learners’ understanding and application of word formation processes. As suggested by Rainer (2015) and Sharifian (2017), for the subsequent investigation, one could examine how cultural differences in communication styles influence the interpretation and use of morphologically complex words.

In addition, Cluster B (*pedagogical practices and learning processes*) highlights the practical and applied aspects of word formation research, focusing on pedagogical practices, learning processes, and the specific context of foreign language instruction. The prominence of terms like “teaching,” “learning,” and “methodology” reflects the growing interest in evidence-based approaches to language teaching, as advocated by Dörnyei and Ushioda (2021) and Dörnyei and Ushioda (2021). The inclusion of terms like “error” and “effectiveness” suggests a focus on evaluating the outcomes of different instructional approaches, aligning with the emphasis on assessment for learning in contemporary language. However, while Cluster B highlights the importance of pedagogical practices, it also raises questions about the optimal ways to integrate word formation instruction into foreign language curricula. As suggested by Dörnyei (2022), Dörnyei and Mentzelopoulos (2022), and Le-Thi et al. (2022), it is imperative to explore how learner characteristics, such as motivation, learning styles, and prior language knowledge, influence the effectiveness of different pedagogical interventions.

Furthermore, Cluster C (*linguistic structures and learner challenges*) delves into the specific linguistic elements and cognitive processes involved in word formation, emphasizing the complexities of language acquisition and individual learner differences. The prominence of terms like “word formation,” “syntax,” and “rule” reflects the importance of understanding the underlying linguistic structures that govern morphological processes, as highlighted by Larsen-Freeman (2014). The inclusion of terms like “acquisition,” “accuracy,” and “difficulty” suggests a focus on the cognitive demands and challenges associated with learning and applying word formation rules in a foreign language. This aligns with research on second language acquisition, which emphasizes the role

of cognitive factors, such as working memory and attention, in language learning (Larsen-Freeman, 2014). However, while Cluster C acknowledges the complexities of language acquisition, it also raises questions about the specific challenges faced by different learner populations. As suggested by Ke et al. (2023) and Larsen-Freeman (2010), it could be beneficial to explore the impact of specific learning difficulties on foreign language learners' ability to acquire and apply morphological knowledge.

Finally, Cluster D (*research methodologies and theoretical applications*) focuses on the application and investigation of word formation knowledge, highlighting the importance of research methodologies, analytical tools, and theoretical frameworks in this field. The prominence of terms like "translation," "text," and "terminology" reflects the practical applications of word formation knowledge in various language-related tasks, such as translation, lexicography, and language teaching. The inclusion of terms like "research," "model," and "mechanism" suggests a focus on the scientific inquiry and theoretical understanding of word formation phenomena. This aligns with the growing emphasis on evidence-based practices in language teaching and research, as advocated by Darvin and Norton (2023) and Norton and De Costa (2018). However, while Cluster D emphasizes the importance of research and analysis, it also raises questions about the most effective methodologies and theoretical frameworks for investigating word formation in foreign language contexts. Further research could investigate the strengths and limitations of different research approaches, such as experimental studies, corpus linguistics, and qualitative analysis, in examining word formation processes. Moreover, studies could investigate the applicability of different theoretical models, such as generative morphology and cognitive linguistics, in explaining and predicting word formation phenomena in foreign language learning.

The pedagogical contributions of this study are multifaceted and directly applicable to classroom practice. First, by highlighting the core linguistic and cognitive foundations (Cluster A), this research underscores the need for educators to move beyond simple memorization, as suggested by Larsen-Freeman (2014). Teachers should design tasks that require students to actively notice and interpret the components of new words, leveraging their existing knowledge to infer meaning. For instance, instead of just providing a list of new vocabulary, an activity could involve analyzing a text to identify prefixes and suffixes and then hypothesizing the meaning of unknown words. Second, the emphasis on pedagogical practices (Cluster B) suggests that instruction on word formation should be explicit and integrated into the curriculum, not treated as an isolated topic, consistent with the findings of Atkinson et al. (2016). This can be

achieved through a process-oriented approach, where instructors guide learners through the stages of understanding, analyzing, and applying morphological rules, while also providing targeted feedback on errors. Finally, the findings from Cluster D (research methodologies and theoretical applications) have practical implications for curriculum design and material development. Curricula can be designed to incorporate diverse learning resources, including authentic texts, corpora, and multimedia, that expose students to a wide range of words and their morphological variations. By adopting these strategies, as noted by Larsen-Freeman (2024), educators can equip learners with useful tools for independent vocabulary expansion and improved language comprehension.

Conclusion

This scientometric investigation has provided insights into the research landscape of word formation in foreign language teaching spanning 2014 – 2024. By identifying key publication trends and four prominent thematic clusters, this study offers a data-driven overview of the current state of research. The findings reveal an escalating field, with a 333% increase in publications over the observed period and prominent contributions from journals such as “Russian Language Studies”, “Perspektivy Nauki i Obrazovania”, and “Xlinguae”. Four distinct thematic clusters were identified: (1) Cluster A (29.1%) encompassing foundational linguistic concepts and cognitive processes; (2) Cluster B (27.9%) focusing on pedagogical practices and learning processes; (3) Cluster C (23.3%) highlighting linguistic elements and acquisition challenges; and (4) Cluster D (19.8%) addressing the application and investigation of word formation knowledge. These findings are significant as they offer a crucial roadmap for researchers to identify underexplored areas and for educators to design evidence-based teaching strategies.

While this study provides insights, it is not without limitations. Firstly, the study relied solely on the Scopus database, which, despite its extensive coverage, may not encompass all relevant publications in this domain. Future work could consider incorporating data from other databases, such as Web of Science, to ensure a more comprehensive analysis. Secondly, the keyword analysis was limited to terms appearing in titles and abstracts, potentially overlooking nuanced thematic information embedded within the full text of the articles. Despite these limitations, this study offers implications for both theory and practice. Theoretically, it contributes to a deeper understanding of the recent research trends and highlights key areas for future investigation. Practically, it provides educators with insights into current trends and research foci in word formation, informing the development of evidence-based pedagogical

approaches and instructional materials that promote effective vocabulary acquisition.

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