УДК 81’23:37.091.33
DOI https://doi.org/10.32782/tps2663-4880/2025.44.2.10

COGNITIVE LINGUISTICS AND MULTIMODAL COGNITIVE SCENARIOS IN VOCABULARY ACQUISITION PROCESSES OF ESP STUDENTS

КОГНІТИВНІ ТА МУЛЬТИМОДАЛЬНІ МЕХАНІЗМИ ЗАСВОЄННЯ ЛЕКСИКИ У НАВЧАННІ АНГЛІЙСЬКОЇ МОВИ ПРОФЕСІЙНОГО СПРЯМУВАННЯ

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This study explores the intersection of cognitive linguistics and multi-modal approaches in language education, emphasizing the enhancement of learners’ cognitive and communicative skills. By integrating theoretical insights with practical pedagogical strategies, the research demonstrates how multi-modal resources – visual, auditory, and interactive elements – can support meaning-making and deepen understanding beyond mere translation. The study also highlights challenges and opportunities in implementing such approaches in classroom settings, providing educators with concrete methods to foster engagement, critical thinking, and language competence.

The research is grounded in the principles of cognitive linguistics, particularly the concepts of conceptualization, embodiment, and cognitive schemes, which are viewed as essential mechanisms in vocabulary acquisition. Special attention is given to the role of multi-modal cognitive scenarios in the teaching of English for Specific Purposes (ESP), where professional discourse requires not only lexical accuracy but also conceptual understanding and contextual appropriateness.

The study employs qualitative analysis of classroom practices and instructional materials, illustrating how multi-modal input facilitates deeper cognitive processing, long-term retention of vocabulary, and the development of professional communicative competence. The findings suggest that the integration of cognitive and multi-modal approaches contributes to learner autonomy, increases motivation, and supports the formation of meaningful associations between linguistic forms and professional concepts.

The results of the study may be applied in higher education contexts, particularly in ESP courses, and can serve as a methodological framework for educators seeking to enhance vocabulary instruction through cognitively informed and multimodally enriched teaching practices.

Key words: cognitive linguistics, multi-modality, language education, ESP, pedagogy, meaning-making, cognitive scenarios.

У статті досліджується взаємодія когнітивної лінгвістики та мультимодальних підходів у викладанні мови, зосереджуючись на розвитку когнітивних та комунікативних навичок учнів. Інтегруючи теоретичні положення з практичними педагогічними стратегіями, робота демонструє, як мультимодальні ресурси – візуальні, аудіальні та інтерактивні елементи – сприяють розумінню значень та глибшому засвоєнню навчального матеріалу. Також висвітлено виклики та можливості впровадження таких підходів у навчальній аудиторії, а також надано конкретні методи для стимулювання залученості, критичного мислення та мовної компетенції учнів.

Теоретичним підґрунтям дослідження є положення когнітивної лінгвістики, зокрема концепції концептуалізації, тілесного досвіду пізнання (embodiment) та когнітивних схем, які розглядаються як ключові механізми засвоєння лексики. Особливу увагу приділено застосуванню мультимодальних когнітивних сценаріїв у навчанні англійської мови професійного спрямування, де оволодіння лексикою передбачає не лише запам’ятовування мовних одиниць, а й формування концептуального розуміння професійного контексту.

У роботі використано якісний аналіз навчальних практик та дидактичних матеріалів, що дозволяє простежити вплив мультимодального подання інформації на глибину когнітивної обробки, довготривале збереження лексичних одиниць та розвиток професійної комунікативної компетентності. Результати дослідження свідчать, що поєднання когнітивного та мультимодального підходів сприяє розвитку автономності учнів, підвищує навчальну мотивацію та формує стійкі смислові зв’язки між мовними формами й професійними концептами.

Практична значущість дослідження полягає у можливості використання запропонованих підходів у закладах вищої освіти, зокрема в курсах англійської мови професійного спрямування, а також у створенні методологічного підґрунтя для вдосконалення лексичного навчання на засадах когнітивної та мультимодальної педагогіки.

Ключові слова: когнітивна лінгвістика, мультимодальність, викладання мови, педагогіка, значеннєво-орієнтований когнітивний підхід, когнітивні сценарії, навчальні стратегії.

In the context of globalisation and rapid technological development, English for Specific Purposes (ESP) has become a crucial component of professional training in higher education. Modern ESP students are expected not only to possess domain-specific vocabulary but also to use it flexibly in professional, academic, and digital environments. However, vocabulary acquisition in ESP contexts remains a challenging process, as traditional approaches often fail to reflect the cognitive and multi-modal nature of contemporary learning [2, p. 5].

Recent advances in cognitive linguistics have demonstrated that vocabulary learning is not a mechanical process of memorisation but a complex cognitive activity involving conceptualisation, categorisation, imagery, and embodied experience. At the same time, the widespread use of multi-modal educational resources – visual, auditory, textual, and interactive – has transformed the ways in which learners process and internalise lexical knowledge [1, p. 320; 5, p. 8]. This shift highlights the necessity of integrating cognitive linguistic principles with multi-modal learning environments in order to enhance vocabulary acquisition processes among ESP students.

Therefore, the study of multi-modal cognitive scenarios as a framework for vocabulary acquisition is of particular relevance. Such scenarios reflect how learners construct meaning through the interaction of multiple semiotic modes and cognitive mechanisms, enabling deeper lexical understanding and more sustainable learning outcomes. Addressing this issue responds to both theoretical challenges in cognitive linguistics and practical demands of ESP pedagogy.

Analysis of Recent Research and Publications. Recent research in the fields of cognitive linguistics, applied linguistics, and ESP methodology has increasingly focused on the cognitive nature of vocabulary acquisition. Cognitive linguistics views language as an integral part of human cognition, where meaning is constructed through conceptual structures such as schemas, frames, prototypes, and metaphors (Langacker, Lakoff, Evans) [2, p. 7; 3, p. 5]. Within this paradigm, vocabulary learning is understood as a process of forming conceptual links rather than memorising isolated lexical units[1, p. 325; 4, p. 4].

Studies on vocabulary acquisition emphasise the role of semantic networks and conceptual categorisation in developing lexical competence. Researchers argue that learners acquire vocabulary more effectively when lexical items are embedded in meaningful contexts and connected to existing cognitive structures. This approach is particularly relevant for ESP learners, whose vocabulary development is closely tied to professional concepts and disciplinary knowledge.

At the same time, a growing body of literature highlights the importance of multi-modality in language learning. Multi-modal learning theory suggests that combining verbal input with visual, auditory, and interactive modes enhances comprehension, retention, and transfer of knowledge. Empirical studies demonstrate that multi-modal resources – such as diagrams, infographics, videos, simulations, and digital platforms – support deeper lexical processing and facilitate the integration of new vocabulary into long-term memory.

In ESP contexts, several scholars have explored the effectiveness of task-based learning, project-based instruction, and digital tools for vocabulary acquisition [4, p. 5; 3, p. 3]. However, while these studies acknowledge cognitive and multi-modal factors, they often treat them separately. The interaction between cognitive linguistic mechanisms and multi-modal learning environments remains insufficiently systematised, particularly in relation to ESP vocabulary acquisition[5, p. 12].

Unresolved Issues and Research Gaps. Despite significant progress in understanding vocabulary acquisition from cognitive and multi-modal perspectives, several unresolved issues remain [2, p. 12; 3, p. 4]. First, existing studies frequently focus either on cognitive linguistic principles or on multi-modal instructional design, without offering an integrated theoretical framework that explains how these dimensions interact in ESP learning. Second, there is a lack of research that explicitly conceptualises vocabulary acquisition as a sequence of multimodal cognitive scenarios, where learners engage with lexical items through coordinated cognitive processes and semiotic modes. The mechanisms through which multi-modal input activates conceptualisation, imagery, and embodied cognition in ESP vocabulary learning are still underexposed [3, p. 6]. Finally, many ESP-oriented studies prioritize short-term learning outcomes and test performance, rather than sustainable vocabulary development and the ability to apply lexical knowledge in authentic professional communication. This creates a need for models that account for both cognitive depth and practical applicability.

These gaps indicate the necessity of further research aimed at integrating cognitive linguistics and multi-modal learning within a unified framework tailored to ESP vocabulary acquisition.

Purpose and Objectives of the Study. The purpose of this article is to explore the role of cognitive linguistics and multi-modal cognitive scenarios in enhancing vocabulary acquisition processes among ESP students.

The objectives of the study are:

• to analyse vocabulary acquisition in ESP learning from a cognitive linguistic perspective;

• to conceptualise multi-modal cognitive scenarios as a mechanism for lexical development;

• to examine how multi-modal resources interact with cognitive processes in ESP vocabulary learning;

• to identify pedagogical implications for improving ESP vocabulary instruction.

Presenting the main material. From the perspective of cognitive linguistics, vocabulary acquisition is inseparable from meaning construction and conceptual organisation. Lexical units are not stored in isolation but are integrated into complex cognitive structures shaped by prior knowledge, experience, and context. For ESP learners, this process is closely connected to professional conceptual domains, where lexical meaning is activated through disciplinary frames and schemes [3, p. 3; 4, p. 5].

Cognitive linguistics emphasis such mechanisms as contextualization, categorization, profiling, and embodiment[2, p. 8; 3, p. 4]. When learning ESP vocabulary, students do not merely acquire linguistic forms but develop conceptual access to specialised knowledge. For example, technical or academic terms are understood through their functional roles within professional activities, processes, and problem-solving situations[4, p. 6; 5, p. 8]. This aligns with the view that lexical competence in ESP is fundamentally conceptual in nature.

Furthermore, cognitive linguistic theory highlights the importance of imagery and metaphor in vocabulary learning. Many ESP terms are grounded in metaphorical extensions that structure abstract professional concepts. Understanding these conceptual mappings enables learners to build stronger semantic connections and facilitates the transfer of vocabulary across contexts. Thus, cognitive linguistics provides a robust explanatory model for how ESP learners paternalist specialized vocabulary in a meaningful and sustainable way.

Multi-modal cognitive scenarios represent structured learning situations in which vocabulary acquisition occurs through the interaction of multiple semiotic modes and cognitive processes [1, p. 322; 5, p. 9]. These scenarios integrate verbal input with visual, auditory, spatial, and interactive elements, creating conditions for deeper lexical processing.

In such scenarios, learners engage with vocabulary through coordinated cognitive actions: observing, interpreting, conceptualising, and applying lexical items within authentic or simulated professional contexts. For instance, a single lexical unit may be introduced through written definitions, visual representations, contextualised audio input, and task-based interaction. This multi-modal engagement activates multiple cognitive channels and supports the formation of stable lexical representations.

From a cognitive standpoint, multi-modal scenarios enhance attention, reduce cognitive load, and promote dual coding of information [2, p. 7; 3, p. 4]. Visual and auditory stimuli support conceptual clarity, while interactive tasks encourage active meaning construction[1, p. 323; 5, p. 9]. In ESP contexts, multimodal cognitive scenarios are particularly effective because they mirror real-life professional communication, where language is rarely used in a single mode.

Importantly, multi-modal cognitive scenarios do not function as supplementary tools but as integral mechanisms of vocabulary acquisition. They enable learners to construct meaning dynamically, linking lexical items to professional actions, tools, and environments.

Practical Implementation in ESP Instruction. The practical application of cognitive and multi-modal principles in ESP instruction requires a shift from traditional vocabulary teaching towards scenario-based learning. Vocabulary tasks should be embedded in professionally relevant contexts that reflect authentic communicative demands.

One effective approach involves the use of problem-based and task-oriented activities, where learners encounter new vocabulary while solving professional tasks [4, p. 6; 5, p. 10]. For example, ESP students may analyse case studies, interpret technical diagrams, or participate in simulated professional meetings. In these activities, vocabulary acquisition occurs naturally as learners negotiate meaning and apply lexical items in context.

Digital learning environments offer extensive opportunities for implementing multi-modal cognitive scenarios. Learning management systems, interactive platforms, and multimedia resources allow instructors to combine texts, visuals, audio materials, and interactive tasks into cohesive learning units. Such environments support autonomous learning and enable repeated exposure to vocabulary in varied contexts, which is essential for long-term retention[2, p. 10; 5, p. 12].

Another important aspect is reflective practice. Encouraging learners to reflect on how they acquire and use vocabulary enhances meta-cognitive awareness and strengthens lexical competence. Reflection tasks, such as concept mapping or vocabulary journals, help learners make explicit connections between lexical items and underlying professional concepts.

Pedagogical Implications for ESP Vocabulary Development. Integrating cognitive linguistics and multi-modal learning into ESP instruction has significant pedagogical implications. First, it shifts the focus from memorisation to meaning-oriented learning, fostering deeper lexical understanding. Second, it supports learner engagement by aligning vocabulary instruction with real-world professional practices.

Moreover, this approach promotes transferability of lexical knowledge. When vocabulary is acquired through cognitive and multi-modal scenarios, learners are better equipped to apply it in new professional and academic contexts. This is particularly important for ESP students preparing for international communication and research dissemination.

Finally, the adoption of multi-modal cognitive scenarios contributes to the development of learner autonomy and lifelong learning skills. By actively constructing meaning and engaging with diverse learning modes, students become more independent and strategic in their vocabulary acquisition [2, p. 14; 3, p. 10; 4, p. 11].

Conclusions and Prospects for Further Research

The present study has demonstrated that vocabulary acquisition in ESP learning is most effective when viewed through the combined lenses of cognitive linguistics and multi-modal pedagogy. Vocabulary learning is not a linear process of memorisation but a dynamic cognitive activity grounded in conceptualisation, categorisation, and contextualised meaning construction. For ESP students, whose lexical competence is closely tied to professional knowledge, such an approach is particularly relevant.

The analysis has shown that multi-modal cognitive scenarios create favourable conditions for deeper lexical processing by engaging multiple cognitive channels and semiotic resources. Through the integration of verbal, visual, auditory, and interactive elements, these scenarios support the formation of stable and flexible lexical representations. They also enhance learners' ability to apply specialised vocabulary in authentic professional and academic contexts.

From a pedagogical perspective, the implementation of cognitive and multi-modal principles contributes to a shift towards meaning-oriented, learner-centred ESP instruction. Scenario-based tasks, digital learning environments, and reflective practices enable students to actively construct lexical knowledge and develop meta cognitive awareness of their learning processes. As a result, vocabulary acquisition becomes more sustainable, transferable, and aligned with real-life professional communication.

The findings of this study suggest that incorporating multimodal cognitive scenarios into ESP curricula can significantly enhance vocabulary acquisition processes and overall communicative competence. At the same time, the study opens several directions for further research. Future investigations may focus on empirical validation of the proposed approach, comparative studies across different ESP domains, and the impact of specific multimodal configurations on vocabulary retention and usage. Additionally, longitudinal studies could provide deeper insights into the long-term effects of cognitive and multimodal strategies on ESP learners' lexical development.

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Дата першого надходження рукопису до видання: 20.11.2025
Дата прийнятого до друку рукопису після рецензування: 19.12.2025
Дата публікації: 31.12.2025