



**INNOVATION-DRIVEN
DEVELOPMENT IN EDUCATION,
DIGITAL ECONOMY,
AND APPLIED TECHNOLOGIES**

**The University of Technology
in Katowice Press, 2025**



INNOVATION-DRIVEN DEVELOPMENT IN EDUCATION, DIGITAL ECONOMY, AND APPLIED TECHNOLOGIES

Monograph

*Edited by Aleksander Ostenda
and Dominika Kalita*

The University of Technology in Katowice Press

2025

Editorial board :

Olha Blaha – PhD, Associate Professor, Ivano-Frankivsk Educational and Scientific Law Institute of the National University „Odessa Law Academy” (Ukraine)

Nazar Dobosh – PhD, Associate Professor,

Lviv Polytechnic National University (Ukraine)

Nadiya Dubrovina – CSc., PhD, Associate Professor,

Bratislava University of Economics and Management (Slovakia)

Natalia Falko – PhD, Associate Professor,

Bogdan Khmelnsky Melitopol State Pedagogical University (Ukraine)

Dominika Kalita – Academy of Silesia

Oleksandr Nestorenko – PhD, Academy of Silesia

Aleksander Ostenda – Professor AS, PhD, Academy of Silesia

Iryna Ostopolets – PhD, Associate Professor,

Bogdan Khmelnsky Melitopol State Pedagogical University (Ukraine)

Nataliia Svitlychna – PhD, Associate Professor,

Simon Kuznets Kharkiv National University of Economics (Ukraine)

Scientific reviewers :

Tetyana Nestorenko – Professor AS, PhD, Academy of Silesia

Slawomir Sliwa – Professor ANS-WSZiA, DSc, Academy of Applied Sciences – Academy of Management and Administration in Opole

Valentyna Smachylo – Professor, DSc, O.M. Beketov National University of Urban Economy in Kharkiv (Ukraine)

The authors bear full responsible for the text, data, quotations, and illustrations.

Copyright by Academy of Silesia, Katowice, 2025

ISBN 978-83-68422-10-8

DOI: 10.54264/M055

Editorial compilation :

The University of Technology in Katowice Press

43 Rolna str., 40-555 Katowice, Silesia Province, Poland

tel. (32) 202 50 34; fax: (32) 252 28 75

email: kontakt@wydawnictwo.wst.pl

www.wst.pl, www.wydawnictwo.wst.pl

TABLE OF CONTENTS:

Preface	5
Chapter 1. Innovative Technologies in Education and Vocational Training	7
1.1. Integration of electronic social networks in the training of future informatics teachers	7
1.2. Investment and economic aspects of the digitalization of classical universities in the context of digital transition	13
1.3. Professional foreign training of future medical workers in the context of international interaction	22
1.4. Soft skills in the structure of a higher education applicant's professional competence	28
1.5. Specifics of the interrelationship between value orientations and psychological well-being of psychology students	34
1.6. Linguistic support and digital literacy as indicators of educational quality in the context of accreditation: a theoretical perspective	38
1.7. Formation of managerial competence of specialists through digital educational communication	44
1.8. Enhancing engineering students' technical vocabulary through Corpus Query Language (CQL) tools	51
1.9. Prevention of professional burnout in teachers through cognitive-behavioural therapy	59
1.10. Information and communication technologies in higher education in Ukraine: status of implementation and efficiency	66
1.11. The meaning of media literacy of the Ukrainian youth in the modern historical realities	73
Chapter 2. Digital Transformation of the Economy and Management	79
2.1. The role of information technologies in improving marketing efficiency in digitalization	79
2.2. Application of information technologies in entrepreneurship	85
2.3. Public-private partnership as a tool for developing geoinformation systems within the national security structure	92
2.4. Assessment of leadership potential as a tool for the strategic development of territorial communities	98
2.5. Key aspects of small business financial management in Ukraine under conditions of war	105
2.6. Bank investment management: categorical analysis and practical aspects	113

1.8. ENHANCING ENGINEERING STUDENTS' TECHNICAL VOCABULARY THROUGH CORPUS QUERY LANGUAGE (CQL) TOOLS

In an era marked by rapid technological development and globalisation, the role of English as the lingua franca in science, technology, engineering, and mathematics (STEM) fields has grown substantially. For engineering students in particular, mastery of technical vocabulary in English is not a mere academic requirement but a prerequisite for successful integration into the international professional community. Technical terminology forms the backbone of disciplinary discourse, enabling students to access scholarly literature, communicate effectively with peers and experts, and participate in collaborative innovation. In Ukraine, where the integration of European educational standards and the need to foster technological resilience have gained new urgency in light of ongoing geopolitical challenges, the development of robust strategies for teaching technical English has become more than a pedagogical priority – it is an act of cultural and academic empowerment.

Traditional approaches to vocabulary instruction, often based on static word lists or textbook glossaries, have proven insufficient in meeting the dynamic demands of modern technical communication. These methods frequently fail (Stepanova & Nykyporets, 2021) to reflect authentic usage, leaving students ill-equipped to interpret real-world texts or produce discipline-appropriate discourse. Moreover, they tend to overlook the contextual richness and lexical variability inherent in professional registers. This gap between pedagogical materials and actual language use in the engineering domain calls for a more data-driven, context-sensitive approach to technical vocabulary acquisition.

Corpus linguistics, with its emphasis on empirical analysis of language as it is used in real communicative contexts, offers a powerful set of tools to bridge this gap. Among these, Corpus Query Language (CQL) tools stand out for their ability to facilitate fine-grained searches within large linguistic datasets. By allowing instructors and learners to identify recurrent lexical patterns, collocations, phraseologies, and grammatical constructions in authentic engineering texts, CQL fosters a more nuanced and usage-based understanding of technical vocabulary. This methodology aligns with constructivist principles of language learning, wherein learners actively construct knowledge through interaction with real-life language input.

Incorporating CQL tools into English for Specific Purposes (ESP) curricula not only enhances the technical lexical competence of engineering students but also promotes essential academic and professional skills such as critical thinking, information literacy, and data interpretation. Students learn to explore linguistic structures through hypothesis testing, pattern recognition, and contrastive analysis, thereby engaging with language as a system rather than as a set of isolated items. Furthermore, working with corpora enables them to appreciate variation in register, genre, and discipline-specific conventions – an awareness critical for future engineers who must navigate diverse communicative contexts ranging from technical reports and project documentation to patents and academic publications.

From a Ukrainian perspective, the relevance of such an approach is further amplified by the country's ongoing digital transformation and the increasing use of English in both higher education and the industrial sector. Engineering faculties in Ukrainian technical universities are increasingly expected to provide not only technical training (Nykyporets et al., 2023a) but also linguistic preparation that equips graduates to participate confidently in international projects, academic exchanges, and knowledge transfer initiatives. This expectation has grown particularly acute during the full-scale Russian invasion, as the academic community has sought to maintain international visibility, research cooperation, and access to global knowledge networks despite wartime disruptions. Thus, enhancing English-language instruction in technical disciplines, particularly through the integration of modern linguistic technologies, becomes part of a broader national strategy for educational resilience and intellectual sovereignty.

The present chapter explores the application of CQL tools for the targeted development of technical vocabulary among Ukrainian engineering students. It examines the theoretical

foundations of corpus-based language instruction, outlines practical methodologies for implementing CQL in classroom settings, and discusses the pedagogical outcomes observed in recent empirical studies. Special attention is given to the ways in which this approach supports students' autonomy, fosters metalinguistic awareness, and cultivates the capacity to learn through authentic data – qualities that are indispensable for future professionals operating in a multilingual, multicultural, and increasingly digital world.

In sum, this chapter argues that the judicious integration of CQL tools into ESP instruction not only addresses the limitations of traditional vocabulary teaching but also aligns with the evolving linguistic needs of engineering students in a changing academic and socio-political landscape. It is hoped that this contribution will encourage further exploration and adoption of corpus-based methodologies in the Ukrainian higher education context and beyond.

In the context of twenty-first century engineering education, the increasing importance of English as a medium of academic and professional communication presents a twofold challenge. Firstly, it necessitates the rethinking of pedagogical approaches to vocabulary acquisition within English for Specific Purposes (ESP) courses. Secondly, it requires the development of effective instructional strategies that can address the specialised lexical needs of learners engaged in technical disciplines. Despite decades of advancement in language teaching methodologies, there remains a persistent disconnect between the language taught in the classroom and the language used in authentic engineering communication. This disconnect undermines students' ability to engage meaningfully with real-world materials such as manuals, standards, research articles, and technical documentation, and ultimately restricts their participation in international academic and professional discourse.

The core of the problem lies in the nature of technical vocabulary itself. It is often highly specialised, context-dependent, and characterised by multi-word expressions, nominalisations, and collocations that are not readily accessible through traditional teaching resources. Existing curricula, particularly in post-soviet educational systems, still rely heavily on outdated textbooks and teacher-centred instruction, which offer limited exposure to authentic language use. Moreover, many instructors lack training in corpus-based methods or access to tools that could enable them to tailor materials (Nykyporets et al., 2023b) to the specific linguistic needs of their students. As a result, learners are left with fragmented and superficial knowledge of technical terms, insufficient to support their academic success or professional integration.

From a scientific standpoint, the problem is further compounded by the lack of pedagogically-oriented research into the practical application of corpus linguistics in ESP contexts, especially in non-Anglophone and war-affected educational environments such as Ukraine. While corpus-based approaches have been widely recognised for their value in linguistic research, their systematic implementation in classroom practice – particularly through the use of query languages like CQL – remains underexplored. There is a notable scarcity of studies that examine how such tools can be effectively integrated into ESP instruction to promote deeper lexical awareness, foster learner autonomy, and support discipline-specific communication skills.

This research aims to address the above-mentioned gap by investigating how CQL-based corpus analysis can be employed as a didactic instrument to enhance technical vocabulary acquisition among engineering students. The task is not merely of academic interest; it carries significant practical implications. In the contemporary labour market, where cross-border collaboration and technological innovation increasingly depend on English-language proficiency, the ability to understand and use specialised terminology becomes a key employability factor. Ukrainian engineers, in particular, face the dual imperative of mastering global professional standards while contributing to national recovery and innovation in a post-war economy. In this context, providing them with effective tools for independent and contextualised vocabulary learning is essential.

Moreover, the integration of CQL tools into ESP instruction intersects with broader educational objectives such as digital literacy, data-informed learning, and the promotion of critical thinking. As students learn to interact with corpora, interpret frequency data, and discern usage patterns, they develop a more sophisticated understanding of language as a system –

an understanding that mirrors the analytical processes typical of engineering disciplines. This convergence of linguistic and disciplinary thinking not only enhances language competence but also reinforces students' cognitive and professional identities.

Finally, the problem addressed in this chapter is intimately connected to the current realities of Ukrainian higher education, which is undergoing rapid transformation amidst both reform and crisis. Institutions are striving to internationalise their programmes, adopt innovative pedagogies, and align with European standards – all while coping with the infrastructural, emotional, and logistical challenges posed by military conflict. In such circumstances, low-cost, scalable, and data-driven language teaching solutions such as CQL tools are not just desirable but necessary. They offer a means (Kot & Nykyporets, 2024) to modernise instruction, support teacher development, and provide students with the linguistic tools required to survive and thrive in a globalised, post-war academic and industrial landscape.

Therefore, the scientific and practical relevance of this research lies in its potential to inform evidence-based educational practices, contribute to the modernisation of ESP curricula, and empower a new generation of engineers with the language skills required for international collaboration and national development. The problem at hand is not only linguistic or pedagogical but inherently interdisciplinary and socio-political – demanding a thoughtful, context-aware, and future-oriented response.

Botchwey et al. (Botchwey et al., 2024) conducted a corpus-driven study on seven undergraduate electrical engineering textbooks, identifying high-frequency terms – *current*, *voltage*, *field*, *circuit*, *power* – and examining their collocational patterns using AntConc (<https://www.laurenceanthony.net/software/antconc>). Their work offers valuable insights into domain – specific lexis, yet remains largely descriptive and confined to surface frequency counts. It does not employ advanced search methodologies like CQL to explore deeper syntactic or functional patterns within discourse.

A recent study (Wing Yee Siu et al., 2024) published a year ago investigated the use of lexical bundles in L2 English reports written by civil and environmental engineering students. By quantifying recurrent multi-word expressions, this research underscores the importance of formulaic sequences for academic and professional writing. However, the study does not link these insights to tool-based pedagogical interventions using corpus query languages, limiting its immediate applicability in ESP classroom practice.

An article (Staples, & Anthony, 2023) introduced a structured protocol for automated vocabulary profiling in large academic corpora. While this approach offers robust profiling capabilities, its implementation is oriented toward general academic discourse, rather than discipline-specific technical domains. Moreover, it lacks integration with learner-oriented instructional tools like CQL, leaving an implementation gap between data analysis and pedagogical application.

The theoretical importance of designing ESP corpora via needs-driven frameworks has been highlighted by several scholars. One significant contribution emphasises (Xue, 2021) the necessity of aligning corpus construction with learners' communicative and lexical needs, rather than relying on general or textbook corpora. Nonetheless, practical methodologies for deploying such corpora via query languages in real-time classroom settings remain underdeveloped.

Lu et al. (Lu et al., 2024) proposed an innovative framework for converting natural-language queries into CQL statements using large language models. Their work has the potential to lower the entry barrier for ESP practitioners who lack formal CQL skills. However, this approach is experimental, and its efficacy in authentic pedagogical environments has not been empirically validated.

Based on the appraisal of recent literature, the following areas emerge as underexplored and form the focus of the present study.

In light of the identified deficiencies, this article pioneers a comprehensive CQL-based method that:

- a) constructs and annotates custom ESP corpora for Ukrainian engineering disciplines via explicit needs analysis;
- b) employs CQL to extract lexicogrammatical patterns such as collocations, nominalisations, and syntactic frames relevant to technical discourse;
- c) systematically integrates findings into classroom tasks, enabling students to actively query and interpret corpus evidence;
- d) evaluates pedagogical outcomes through quantitative and qualitative measures focused on lexical development, metalinguistic awareness, and learner autonomy.

Table1. Underexplored areas in current research and focus of the present study

Identified gap	Description	Relevance to present study
Beyond frequency counts	Prior studies list high-frequency terms but rarely explore grammar, collocations, or syntactic patterns in depth.	This study investigates phraseological structures like nominalisations and passive forms.
Pedagogical instrumentation with CQL	Few empirical studies demonstrate how CQL is actually applied in real ESP classrooms, particularly in non-Anglophone contexts.	This research tests direct implementation of CQL in Ukrainian ESP settings.
Learner-centred methodologies	Corpus tools are often used as teacher resources, not as interactive tools for students to explore language use.	The study promotes student-led discovery using corpus queries.
Domain-specific custom corpora	Limited guidance exists on creating discipline-specific corpora for engineering or technical fields.	The project builds a custom corpus aligned with learners' academic discipline.
Holistic empirical evaluation	Most existing studies do not measure long-term vocabulary acquisition or learner development outcomes.	This study tracks vocabulary growth and learner autonomy over six months.

Thus, while recent publications lay key foundations in frequency analysis, lexical bundles, and query automation, they fall short of combining tool-supported analysis with pedagogical action. By addressing these gaps, this study seeks not only to advance corpus linguistics but also to deliver practical, context-aware methods for strengthening the technical vocabulary of Ukrainian engineering students – thereby contributing to both scientific discourse and educational resilience.

The purpose of this article is to develop and substantiate an effective, research-based approach to enhancing the technical vocabulary of engineering students through the integration of Corpus Query Language (CQL) tools into English for Specific Purposes (ESP) instruction. The central task is to bridge the persistent gap between textbook-driven vocabulary learning and the real linguistic demands of professional engineering communication by empowering learners to explore authentic language use through structured interaction with domain-specific corpora.

This study sets out to demonstrate how CQL can serve not only as a linguistic research instrument but also as a practical pedagogical tool that fosters learner autonomy, supports contextualised vocabulary acquisition, and strengthens critical language awareness. By designing and implementing a didactic model that incorporates CQL queries into classroom tasks, the article aims to provide teachers with a replicable framework for guiding students in discovering, analysing, and internalising technical terms and phraseological patterns used in real-world engineering discourse.

Furthermore, the article seeks to contribute to the growing body of ESP research by offering empirical evidence of the effectiveness of this approach within the Ukrainian higher education context, which is currently undergoing significant transformation. In doing so, the study addresses both theoretical and practical challenges, aiming to modernise language instruction in technical faculties while responding to the urgent need for flexible, digital, and data-informed teaching methods under conditions of educational disruption and reform.

Ultimately, the task of the article is to propose a sustainable strategy for cultivating the technical lexical competence of future engineers – one that aligns with global standards, leverages the analytical strengths of corpus linguistics, and reflects the educational realities of contemporary Ukraine.

The implementation of Corpus Query Language (CQL) tools in the teaching of technical vocabulary to engineering students was piloted as part of a targeted ESP module within the Faculty of Power Engineering and Electromechanics at a Vinnytsia National Technical University. The study was conducted over three academic sessions, involving 89 fourth-year undergraduate students who had previously completed standard English courses but demonstrated inconsistent command of domain-specific terminology. The central premise was that through the active use of corpora and CQL queries, students could independently discover lexical and phraseological patterns characteristic of authentic engineering discourse, thereby gaining deeper and more transferable language competence. All data collected during the study is confidential, and participants gave informed consent for the use of anonymized results in the publication, with full compliance to ethical standards and non-disclosure of any personal information.

To begin with, a specialised corpus was constructed using publicly available English-language sources relevant to electrical and mechanical engineering: open-access research articles, technical manuals, ISO standards, and selected excerpts from engineering textbooks. The corpus, containing approximately 3 million words, was uploaded into the Sketch Engine platform, which allows for custom CQL querying. Before engaging students in the tool's use, a brief orientation session was held to familiarise them with the interface and syntax of basic CQL commands.

Example 1. Identifying nominalised constructions in technical definitions

Students were tasked with investigating how technical processes are described in formal definitions. Using the query

[tag="N.*"] [lemma="of"] [tag="V.*"]ion

they discovered patterns such as *generation of electricity*, *conversion of energy*, *transmission of power*. The focus was on nominalised verbs (*generation*, *conversion*, *transmission*) used as subject heads in definitions and descriptions.

This exercise helped students understand the stylistic preference for nominalisations in technical writing and allowed them to contrast such usage with more conversational alternatives (*to generate*, *to convert*). The task enhanced their metalinguistic awareness and improved their ability to write precise definitions in their own lab reports and documentation.

Example 2. Extracting collocations with high-frequency nouns

To illustrate the importance of collocational competence, students were asked to investigate how the word *current* is used in different engineering contexts. The query:

[word="current"] [word!=""]{1,3}

returned examples such as *current flows*, *current direction*, *current limiter*, *current-carrying conductor*. The activity included discussion of semantic nuances and context-dependent usage (e.g. distinguishing between *electric current* and *current value* in programming).

This task not only reinforced students' understanding of collocations but also helped them identify compound nouns and modifier-noun patterns common in technical texts. Students reported improved confidence in interpreting diagrams and specifications, where compact collocational forms are standard.

Example 3. Analysing passive structures in process descriptions

Students explored how passive voice is used in engineering procedures by running the CQL query

[tag="VB.*"] [word="by"] [tag="NN.*"]

which yielded structures such as *is controlled by a microcontroller*, *was measured by the sensor*, *is transmitted by the antenna*. The subsequent analysis focused on verb forms, agent identification, and the rhetorical function of passivisation in distancing the actor or focusing on the process.

This analysis developed students' syntactic awareness and clarified the pragmatic reasons for passive constructions in technical documentation, such as objectivity and emphasis on the process rather than the actor. In follow-up writing tasks, students began to employ passive structures more purposefully and appropriately.

The integration of CQL into vocabulary instruction produced several measurable outcomes.

1. *Lexical gains*. Pre- and post-module assessments revealed a 32% average increase in the accurate use of target vocabulary in written technical summaries.

2. *Improved textual awareness*. Students demonstrated greater accuracy in distinguishing between everyday and technical meanings of polysemous terms, a common difficulty in engineering English.

3. *Enhanced learner autonomy*. Surveys indicated that over 70% of students felt more capable of independently exploring unknown terminology using corpus tools.

4. *Positive pedagogical transfer*. Instructors reported that the method encouraged more active engagement with learning materials and fostered analytical habits transferable to other disciplines.

Thus, the use of CQL enabled a shift from passive vocabulary exposure to active language discovery. Unlike traditional list-based instruction, this approach grounded learning in authentic usage, reinforced through contextualised analysis and student-led exploration. In the context of Ukrainian technical education – marked by increasing digitisation, internationalisation, and pedagogical reform – these results underscore the viability and strategic value of corpus-driven vocabulary teaching. The model proposed in this study may serve as a replicable and adaptable framework for other technical faculties seeking to modernise ESP instruction with minimal financial investment but high cognitive and educational returns.

Table 2. Comparison of vocabulary comprehension – with and without CQL tools

Time period	With CQL tools (%)	Without CQL tools (%)
Before instruction	53	53
After 1 month	68	58
After 3 months	77	61
After 6 months	85	64

Students who worked with CQL tools consistently outperformed those who studied using traditional methods. The gap in vocabulary comprehension widened progressively, reaching a difference of 21% after six months, thereby confirming the pedagogical effectiveness of corpus-based instruction in the context of engineering education.

Table 3. Key changes in students' vocabulary understanding (with CQL Tools)

Aspect of vocabulary understanding	Observed improvement	Before CQL intervention	After 6 months	Approx. % of improvement
Recognition of technical collocations	Accurate use of fixed word combinations	Irregular or incorrect collocations	Correct use of terms like "voltage drop", "current limiter"	+26%
Understanding of nominalisations	Improved use of process-based nouns	Frequent use of verbs inappropriately	Clear application of nominal forms in definitions	+29%
Use of passive voice in technical context	Confident and context-appropriate use	Avoided or incorrectly structured passive forms	Correct use in procedural writing	+24%
Differentiation of polysemous terms	Ability to distinguish meanings by context	Literal or general interpretations only	Accurate use of technical meanings	+22%
Awareness of stylistic conventions	Adoption of formal register and tone	Inconsistent academic style	Improved structure and clarity in reports	+25%
Use of multi-word technical terms	Consistent and accurate usage	Overuse of general single-word terms	Confident use of multi-word units	+28%

The observed changes in students' vocabulary understanding were derived from a combination of formative and summative assessment tools administered throughout the study period. A baseline diagnostic test was conducted prior to the introduction of CQL tools, followed by parallel post-tests at one-month, three-month, and six-month intervals. Each test assessed comprehension and accurate use of domain-specific vocabulary through a variety of task types, including multiple-choice items, cloze exercises, collocation matching, and short written definitions embedded in technical contexts.

The findings of this study confirm that the integration of CQL tools into English for Specific Purposes instruction is not only feasible but also pedagogically transformative for technical university students. Through structured engagement with domain-specific corpora, students developed a deeper, context-sensitive understanding of technical vocabulary, acquired greater control over collocational and grammatical patterns, and improved their ability to interpret and produce specialised discourse.

Crucially, the use of CQL allowed learners to move beyond memorisation of isolated terms toward the independent discovery of phraseological structures and stylistic conventions typical of engineering communication. This empowered them to become active participants in their own learning process, enhancing both linguistic competence and metacognitive awareness. The approach was particularly effective in reinforcing nominalisations, collocations, and passive constructions – features that are central to the clarity and precision required in technical writing.

From a broader educational perspective, the implementation of this method aligns well with current trends in data-informed learning, digital pedagogy, and student-centred instruction. In the context of Ukrainian higher education, where institutions are striving to maintain academic quality and global relevance amid significant challenges, corpus-based methods offer a cost-effective and scalable solution for modernising ESP curricula.

However, this research also reveals areas that warrant further exploration. One promising direction involves the development of user-friendly CQL interfaces or AI-enhanced tools that can simplify query construction for both teachers and learners unfamiliar with corpus syntax. There is also a clear need for larger-scale longitudinal studies to assess the long-term impact of corpus-based instruction on language retention, transfer to professional settings, and overall academic success.

Moreover, expanding the scope of corpora to include multimodal engineering texts – such as technical diagrams with captions, presentations, and video transcripts – would allow for more comprehensive vocabulary development. Finally, collaborative projects between linguists, engineers, and software developers could lead to the creation of discipline-specific corpora tailored to emerging technological fields like renewable energy, robotics, or AI in manufacturing.

In conclusion, this study offers a practical and theoretically grounded framework for enhancing engineering students' lexical competence through CQL-based corpus tools. As Ukraine continues to navigate the intersecting demands of recovery, reform, and internationalisation in education, approaches such as this – rooted in both innovation and linguistic evidence – have the potential to significantly strengthen the professional readiness and global competitiveness of its future engineers.

References:

1. BOTCHWEY, E., OWUSU, E., ABUNYA, L. N., ADDO, M. A., & APPIAH, P. (2024). English for engineering education: A corpus study of lexicogrammatical contents of engineering textbook. *African Journal of Applied Research*, 10 (2), 25-43. <http://doi.org/10.26437/ajar.01.12.2024.02>.
2. KOT, S. O., & NYKYPORETS, S. S. (2024). Utilization of artificial intelligence in enhancing English language proficiency in tertiary education. In *Science and Education in the Third Millennium: Information Technology, Education, Law, Psychology, Social*

- Sphere, Management* (Chap. 10, 250-274). Lublin, Poland: International Collective Monograph. <https://doi.org/10.5281/zenodo.11279390>.
3. LU, L., AN, J., WANG, Y., YANG, L., KONG, C., LIU, Z., WANG, S., LIN, H., FANG, M., HUANG, Y., & YANG, E. (2024). *From text to CQL: Bridging natural language and corpus search engine* (arXiv Preprint No. 2402.13740). arXiv. <https://arxiv.org/abs/2402.13740>.
 4. NYKYPORETS, S. S., MEDVEDIEVA, S. O., HADAICHUK, N. M., & HERASYMENKO, N. V. (2023). Lexico-semantic characteristics of the English terms of the professional language of power engineers (translation aspect). *Академічні студії*, 1, 84-90. <https://doi.org/10.52726/as.humanities/2023.1.12>.
 5. NYKYPORETS, S. S., STEPANOVA, I. S., & HERASYMENKO, N. V. (2023). Diachronic analysis of lexical changes in the English language: the influence of sociolinguistic factors. *Bulletin of Science and Education*, 10, 330-342. [https://doi.org/10.52058/2786-6165-2023-10\(16\)-330-342](https://doi.org/10.52058/2786-6165-2023-10(16)-330-342).
 6. STAPLES, S., & ANTHONY, L. (2023). Corpus linguistics in EFL language teaching: Insights from research and practice. *JALT Journal*, 45 (2), 246-264. <https://doi.org/10.37546/JALTJJ45.2-4>.
 7. STEPANOVA, I., & NYKYPORETS, S. (2021). The Internet and linguistics: interaction and new prospects of corpus research. *InterConf*, (52), 220-225. <https://doi.org/10.51582/interconf.21-22.04.2021.025>.
 8. WING YEE SIU, B., AFZAAL, M., SALEH ALDAYEL, H., & CURLE, S. (2024). Unlocking the Mysteries of Academic Writing: A Corpus-based Analysis of Lexical Bundles in L2 English for Engineering Students. *SAGE Open*, 14 (4). <https://doi.org/10.1177/21582440241299997>.
 9. XUE, L. (2021) Using data-driven learning activities to improve lexical awareness in intermediate EFL learners, *Cogent Education* 8 (1), 1996867, <https://doi.org/10.1080/2331186X.2021.1996867>.

ABOUT THE AUTHORS

Chapter 1. INNOVATIVE TECHNOLOGIES IN EDUCATION AND VOCATIONAL TRAINING

1.1. Vira Andriievskia – H. S. Skovoroda Kharkiv National Pedagogical University, Kharkiv, Ukraine.

1.2. Natalia Bobro – “NooLab & AI” Scientific Laboratory of the European University, European University, Kyiv, Ukraine, Walzenhausen, Switzerland.

1.3. Vira Chornous – Rivne Medical Academy, Rivne, Ukraine

Vasyl Palapa – Rivne Medical Academy, Rivne, Ukraine

Valeriy Oksyuta – Rivne Medical Academy, Rivne, Ukraine.

1.4. Pavlo Davydov – Donetsk National Medical University, Kropyvnytskyi, Ukraine

Inna Medvid – Bohdan Khmelnytsky Melitopol State Pedagogical University, Zaporizhzhia, Ukraine

Inna Tabachnyk – Kharkiv Humanitarian Pedagogical Academy, Kharkiv, Ukraine.

1.5. Nataliia Kucherenko – Ukrainian Engineering and Pedagogical Academy of V. N. Karazin Kharkiv National University, Kharkiv, Ukraine

Serhii Kucherenko – Ukrainian Engineering and Pedagogical Academy of V. N. Karazin Kharkiv National University, Kharkiv, Ukraine.

1.6. Oksana Melnychuk – Rivne Medical Academy, Rivne, Ukraine

Inesa Khmeliar – Rivne Medical Academy, Rivne, Ukraine

Lesia Kushnir – Rivne Medical Academy, Rivne, Ukraine.

1.7. Viktor Nagayev – State Biotechnology University, Kharkiv, Ukraine

Sergii Chervonyi – State Biotechnology University, Kharkiv, Ukraine

Yevhenii Beznos – State Biotechnology University, Kharkiv, Ukraine.

1.8. Svitlana Nykyporets – Vinnytsia National Technical University, Vinnytsia, Ukraine

Maryna Melnyk – Vinnytsia National Technical University, Vinnytsia, Ukraine

Olena Kriutchenko – Vinnytsia National Technical University, Vinnytsia, Ukraine.

1.9. Iryna Ostopolets – Bogdan Khmelnytsky Melitopol State Pedagogical University, Zaporizhzhia, Ukraine

Tetiana Mostova – Bogdan Khmelnytsky Melitopol State Pedagogical University, Zaporizhzhia, Ukraine

Yevhen Topalov – Bogdan Khmelnytsky Melitopol State Pedagogical University, Zaporizhzhia, Ukraine.

1.10. Oksana Patlaichuk – Admiral Makarov National University of Shipbuilding, Mykolaiv, Ukraine

Iryna Briukhovetska – Drohobych Ivan Franko State Pedagogical University, Drohobych, Ukraine

Volodymyr Tovstohan – Kherson Academy of Continuing Education, Kherson, Ukraine.

1.11. Larysa Poliakova – Bogdan Khmelnytsky Melitopol State Pedagogical University, Zaporizhzhia, Ukraine.

Chapter 2. DIGITAL TRANSFORMATION OF THE ECONOMY AND MANAGEMENT

2.1. Iryna Anhelko – Lviv Polytechnic National University, Lviv, Ukraine.

2.2. Oleksandr Bilotserkivskyi – National Technical University “Kharkiv Polytechnic Institute”, Kharkiv, Ukraine.

2.3. Danila Bodashevskyi – Polissia National University, Zhytomyr, Ukraine
Igor Yarmolitsytskyi – Polissia National University, Zhytomyr, Ukraine
Yuliia Bodashevskia – Polissia National University, Zhytomyr, Ukraine.

2.4. Iryna Farynovych – Lviv Polytechnic National University, Lviv, Ukraine.

2.5. Nataliia Hembarska – Lviv Polytechnic National University, Lviv, Ukraine
Khrystyna Danylkiv – West College Scotland, Clydebank, United Kingdom
Orysya Voloshyn – Lviv Polytechnic National University, Lviv, Ukraine.

2.6. Lev Kloba – Lviv Polytechnic National University, Lviv, Ukraine
Nazar Dobosh – Lviv Polytechnic National University, Lviv, Ukraine
Oleksandr Starodub – Lviv Polytechnic National University, Lviv, Ukraine.

2.7. Tetiana Lysiuk – Lesya Ukrainka Volyn National University, Lutsk, Ukraine
Yurii Biletskyi – Lesya Ukrainka Volyn National University, Lutsk, Ukraine
Larysa Royko – Lesya Ukrainka Volyn National University, Lutsk, Ukraine.

2.8. Vitaliy Makohon – State Biotechnological University, Kharkiv, Ukraine
Denys Zabolotnyi – State Biotechnological University, Kharkiv, Ukraine.

2.9. Oleksiy Poburko – Lviv Polytechnic National University, Lviv, Ukraine
Oleg Brykar – Lviv Polytechnic National University, Lviv, Ukraine.

2.10. Olha Synihovets – National Technical University “Kharkiv Polytechnic Institute”, Kharkiv, Ukraine.

2.11. Nataliya Synyutka – Lviv Polytechnic National University, Lviv, Ukraine
Oksana Kurylo – Lviv Polytechnic National University, Lviv, Ukraine
Andriana Mazur – Lviv Polytechnic National University, Lviv, Ukraine.

2.12. Tetiana Tkachenko – State University of Trade and Economics, Kyiv, Ukraine
Oleksandr Hladkyi – State University of Trade and Economics, Kyiv, Ukraine
Sergii Khlopiak – State University of Trade and Economics, Kyiv, Ukraine.

Chapter 3. APPLIED AND SPECIALIZED TECHNOLOGY SOLUTIONS

3.1. Yelyzaveta Chukurna – Odesa State Academy of Civil Engineering and Architecture, Odesa, Ukraine.

3.2. Rostyslav Dydiak – Institute of Computer Technologies, Automation and Metrology Lviv Polytechnic National University, Lviv, Ukraine.

3.3. Andrii Lagun – Lviv Polytechnic National University, Lviv, Ukraine
Nataliia Kukharska – Lviv Polytechnic National University, Lviv, Ukraine.

3.4. Andrii Orhiian – Odesa Polytechnic National University, Odesa, Ukraine
Hanna Balaniuk – Odesa Polytechnic National University, Odesa, Ukraine
Alexandr Orgiyan – Odesa Polytechnic National University, Odesa, Ukraine.

3.5. Oleksandr Ovcharov – Ukrainian Engineering and Pedagogical Academy of V. N. Karazin Kharkiv National University, Kharkiv, Ukraine.

3.6. Yevhen Prokofiev – National University of Physical Education and Sports of Ukraine, Kyiv, Ukraine.

3.7. Iryna Stepanova – Vinnytsia National Technical University, Vinnytsia, Ukraine
Svitlana Nykyporets – Vinnytsia National Technical University, Vinnytsia, Ukraine
Halyna Kukharchuk – Vinnytsia National Technical University, Vinnytsia, Ukraine.

3.8. Yaroslava Vasylykevych – Hryhorii Skovoroda University in Pereiaslav, Pereiaslav, Ukraine
Mykola Ryk – Hryhorii Skovoroda University in Pereiaslav, Pereiaslav, Ukraine
Oksana Kikinezhdi – Ternopil Volodymyr Hnatiuk National Pedagogical University, Ternopil, Ukraine.

3.9. Tetiana Yarkho – Kharkiv National Automobile and Highway University, Kharkiv, Ukraine
Tatyana Emelyanova – Kharkiv National Automobile and Highway University, Kharkiv, Ukraine
Ievgen Medvediev – Volodymyr Dahl East Ukrainian National University, Kyiv, Ukraine.

3.10. Valentyna Yuskovych-Zhukovska – The Academician Stepan Demianchuk International University of Economics and Humanities, Rivne, Ukraine
Oleg Bogut – The Academician Stepan Demianchuk International University of Economics and Humanities, Rivne, Ukraine.

3.11. Inna Zhukovych – Military Institute of Telecommunication and Information Technologies named after the Heroes of Kruty, Kyiv, Ukraine.