UDC 001.81:001.89:504
ISSN: 2707-3092 (Online)
DOI: https://doi.org/10.32835/2707-3092.2026.32.235-247

Institute of Vocational Education of NAES of Ukraine

Professional Pedagogics/1(32)'2026, pp. 235-247

To cite this article: Dushkin, S., Sierikova, O., & Babakin, V. (2026). METHODOLOGY FOR CREATING TITLES OF SCIENTIFIC ARTICLES ON ECOLOGICAL ISSUES. *Professional Pedagogics*, *1*(32), 235-247. https://doi.org/10.32835/2707-3092.2026.32.235-247

METHODOLOGY FOR CREATING TITLES OF SCIENTIFIC ARTICLES ON ECOLOGICAL ISSUES

Stanislav Dushkin[1], Olena Sierikova[2], Vadym Babakin[3]

1 PhD in Technical Sciences, Associate Professor, Kharkiv National Automobile and Highway University https://orcid.org/0000-0002-9345-9632, e-mail: dushkin@khadi.kharkov.ua

2 Doctor of Technical Sciences, Associate Professor, Leading Researcher, National Scientific Center "Hon. Prof. M.S. Bokarius Forensic Science Institute" https://orcid.org/0000-0003-0354-9720, e-mail: sierikova_olena@ukr.net

3 Doctor of Law, Professor, Leading Researcher National Scientific Center "Hon. Prof. M.S. Bokarius Forensic Science Institute", https://orcid.org/0000-0002-7157-0241, e-mail: babakin_vadym@ukr.net

Abstract

Relevance the global shift toward "Vocational Education 4.0" and the integration of specialists into the international academic space significantly increase the requirements for scientific metadata quality; in the environmental safety sector, the article title serves as a primary indexing element; however, typical lexical barriers and structural redundancy often hinder the visibility of Ukrainian research in Scopus and Web of Science; aressing the research gap in systematizing title-forming methodologies is vital for enhancing international scientific communication and ensuring the accurate representation of environmental findings.

*Purpose***:** this study aims to develop and scientifically substantiate a methodology for creating titles of scientific articles on environmental issues that comply with the linguistic and technical requirements of international scientometric databases.

*Methods***:** the research followed a phased mixed-methods design, integrating comparative linguistic analysis, content analysis of highly cited environmental publications (Q1-Q2), and a deductive approach to systematizing title effectiveness criteria; practical testing involved a "diagnostic and corrective" stage with master's and doctoral students majoring in "Ecology," utilizing the "semantic deletion" technique to transform descriptive Ukrainian structures into concise English nominative groups.

Results. Empirical findings establish that effective environmental research titles contain 8–12 words, place the key object in the initial position, and utilize the "Object: Aspect" model. The application of the proposed semantic deletion method reduces title length by 30–50% without loss of scientific meaning. The study identifies typical errors in English adaptation, specifically literal calquing and excessive use of prepositions, which negatively affect Field-Weighted Citation Impact (FWCI). A step-by-step algorithm was developed, integrating noun adjuncts and gerund constructions to align titles with Academic English standards.

*Conclusions***:** the developed methodology represents a strategic tool for increasing the academic mobility and competitiveness of specialists in the environmental safety field. Effective title construction facilitates a transition from "descriptiveness" to "nominativeness," optimizing metadata for search engine algorithms; practically, the results provide a scalable framework for academic writing courses, helping young scientists avoid technical errors at the manuscript submission stage and increasing the citation potential of environmental research.

Keywords: *environmental research communication; academic writing; scientometric visibility; metadata optimisation; English-language titles.*

Introduction. The processes of globalisation, which have affected all areas of modern life, have become a decisive factor in the transformation of the global scientific community. Today, scientific activity is no longer limited by national borders and is based on the intensive exchange of knowledge, discoveries, and research results. According to J.A. Diao (2021), the effectiveness of international scientific communication largely depends on the quality of article metadata, where the title functions as a primary element for indexing and retrieval. Within this context, Ukrainian researchers, particularly specialists in environmental sciences, are increasingly integrating into the global academic space through publications indexed in Scopus and Web of Science.

The title is the first element of a scientific text encountered by both readers and search engines. In the field of environmental science, which is characterised by a high level of interdisciplinarity, the accuracy and structure of the title determine the relevance of information retrieval. As noted by N. Abbasi Dashtaki et al. (2025), poorly structured titles generate "information noise", as a result of which scientifically significant environmental findings may remain unnoticed by the academic community. Empirical studies by K. Orbay (2025), K. Hyland & H.J. Zou (2022), and P. Pottier et al. (2024) demonstrated a direct correlation between title length, the presence of key terms, and citation indicators.

The issue of translating and adapting scientific article titles is of particular importance in the context of international academic communication. According to O.O. Jegede (2020) and O. Chesnokova et al. (2019), the linguistic features of academic writing require not only language proficiency but also an understanding of the principles of nominative construction that ensure the unambiguous interpretation of scientific results. Despite the availability of general editorial guidelines, the methodology for forming titles in the field of environmental safety remains insufficiently systematised. As emphasised by K.V. Holovenko (2024) and K. Hyland & H.J. Zou (2022), effective title construction must simultaneously account for linguistic norms and technical requirements of metadata indexing. The systematisation of these approaches contributes to increasing the international visibility of Ukrainian research and ensuring its accurate representation in global scientific networks.

The paradigm of environmental education in Ukraine and worldwide is undergoing significant transformations, with a growing focus on training specialists capable of integrating into the global scientific and information space. As noted by L.M.C. Benavides et al. (2020), the development of modern environmental education is inseparable from the formation of scientific communication culture, which constitutes a core component of professional competence. International experience demonstrates that the effectiveness of training future ecologists is assessed not only by the level of technical knowledge, but also by the ability to present and disseminate research results, where the article title serves as a primary instrument for identifying scientific outcomes in the digital environment.

The specifics of training higher education students in environmental studies require the implementation of targeted methods aimed at developing academic literacy. As emphasised by Khan M. A. W. (2023), the interdisciplinary nature of environmental sciences often leads students to overload article titles with excessive and highly specialised terminology, which complicates both perception and indexing of scientific works. Methodological support for academic writing should therefore focus on developing skills of concise and precise formulation of research ideas, which is a critical prerequisite for the future publication activity of specialists in the field of environmental safety.

In view of the above, the relevance of this study is determined by the need to develop systematic and practically oriented methodological

recommendations that can be used by both experienced researchers and students of technical higher education institutions. The implementation of the proposed methodology in educational and professional practice contributes to minimising terminological and structural barriers in academic writing and improves the quality of training of young scientists. The objective of this article is to develop and scientifically substantiate an algorithm for forming titles of scientific works in the field of environmental studies that complies with the requirements of international scientometric databases and ensures effective representation of Ukrainian research in the global academic space, as emphasised in contemporary approaches to academic writing and publication strategies.

Methods. To ensure objectivity and scientific reliability of the results, a comprehensive methodological approach based on the principles of systematicity and interdisciplinarity was applied in the work. The study of the methodology for creating titles integrated knowledge from the fields of environmental orientation, applied linguistics, and scientometrics. The theoretical basis of the study is fundamental works that reveal the role of the title as a prepositional unit of text (Holovenko, 2024), as well as scientometric studies on the impact of metadata on the indexing of publications in international databases (Diao, 2021; Hyland & Zou, 2022).

The study involved analysis and synthesis to examine existing approaches to the formation of academic style and their subsequent systematisation. Additionally, a comparative linguistic method was applied to compare the syntactic structures of titles in Ukrainian and English scientific discourses. Finally, a deductive method was utilised to develop an algorithm for constructing titles based on general requirements for scientific publications. The object of the study was linguistic and structural models of titles of scientific articles in the field of environmental safety and related technical sciences. To achieve the goal of the work, a representative sample of publication titles indexed in the international scientometric databases Scopus and Web of Science for 2020–2025 was formed. The analysis included titles of articles from leading professional publications, in particular those focusing on the problems of environmental monitoring, technogenic safety, and methods of training technical specialists.

The research procedure involved a step-by-step study of the structural elements of titles based on several key criteria. First, information density was evaluated by analysing the ratio of commonly used vocabulary to highly specialised terms in the field of environmental safety, such as 'environmental risk,' 'technogenic safety,' and 'pollutant dispersion.' The syntactic structure was then examined to identify predominant types of constructions, including nominative sentences, two-part constructions, and the use of colons to clarify the subject of the study. Additionally, the study included a statistical calculation of title length in relation to high and low citation rates, utilising Field-Weighted Citation Impact metrics. Finally, the correctness of English adaptation was assessed by comparing author translations with the norms of Academic English to identify cases of literal translation, such as 'calculation,' that might distort the scientific content.

Particular attention was paid to identifying “parasitic words” and redundant phrases, which have no semantic meaning but take up space in the metadata, hindering the effective work of search algorithms (Hyland & Zou, 2022). The methodology for creating titles was developed in three consecutive stages, which ensured the logical integrity and practical focus of the study:

Analytical and research stage. At the initial stage of the study, comprehensive monitoring of the requirements of leading international publishers (Springer Nature, 2024; Milojević S., 2017) and analysis of the metadata of highly cited articles in the field of environmental safety were carried out. This made it possible to take into account the current linguistic parameters for constructing English-language titles and abstracts that meet international standards of academic writing (Jegede, 2020; Pottier et al., 2024). To form a representative sample, the Scopus scientometric database toolkit was used, which enabled the selection of more than 200 titles of publications in first and second quartile (Q1–Q2) journals within the 'Environmental Science' category.

Particular attention was paid to studying the correlation between the structure of the title and its visibility in the digital environment. As part of this stage, methodological approaches to teaching academic writing at technical universities were analysed, which made it possible to identify typical lexical barriers faced by students and young scientists

when preparing manuscripts (Benavides, 2020). The ranking and classification of these journals were determined based on the SCImago Journal & Country Rank (SCImago, n.d.), ensuring the selection of high-impact academic sources that adhere to international linguistic and structural standards. The search and systematisation of materials were based on the principles of a systematic approach to scientific communication, taking into account both linguistic parameters (length, syntax) and technical factors (SEO optimisation of titles for search algorithms), which is in line with the strategic directions for the development of higher education in the context of digitalisation (Blyzniuk, 2025).

Diagnostic and corrective stage. At this stage, practical testing of the previously developed title models was carried out within the educational process of training master's and doctoral students majoring in E2 'Ecology'. The aim of this stage was to identify typical linguistic and logical difficulties that arise for students when transforming complex scientific concepts into concise English and Ukrainian titles.

The diagnosis was carried out by analysing drafts of students' scientific works before and after familiarisation with the developed rules of 'semantic deletion'. To enhance the educational effect, elements of interactive learning were integrated into the process, in particular the analysis of case studies of real publications with a low citation index due to incorrect metadata. This approach is consistent with current trends in the use of business games and simulations in the training of ecologists, which allows for the modelling of professional situations in scientific communication (Lutsenko, 2019; Dushkin, 2025).

The corrective part of the stage involved adapting the methodology based on the feedback received. In particular, the block of recommendations on the use of gerund constructions and noun groups in English-language titles was strengthened, as this aspect proved to be the most problematic for applicants who tend to calque Ukrainian-language structures (Khan, 2023). The effectiveness of the correction was assessed by comparing the relevance of the formed titles to the requirements of international standards of academic writing (Mao et al., 2024).

*Systematisation and forecasting stage***.** At the final stage of the study, the data obtained was summarised and a comprehensive model for forming the title of a scientific article was developed. The main focus was on systematising lexical and grammatical constructions that ensure maximum accuracy of content transmission with a minimum amount of text. The modelling was based on the principle of a 'semantic core', where each unit of the title performs the function of identifying an object, method, or scientific result.

Based on the results of the diagnostic and corrective stage, a predictive model of title success in international scientific discourse was developed. This model is founded on the synthesis of linguistic conciseness and terminological compliance with established European environmental education standards (Bianchi et al., 2022). The methodology was structured in the form of an algorithm that can be used by students of technical universities when preparing publications, which contributes to the development of their professional and digital competence (Blyzniuk, 2025).

The result of this stage was the finalisation of comparative tables of title transformations, which demonstrate the effectiveness of the methodology of 'deletion' and the transition from descriptive to nominative structures. The data obtained made it possible to predict an increase in the visibility of young scientists' research papers in global networks, provided that the developed methodological recommendations are followed (Abramo et al., 2016). The tools used made it possible not only to analyse the static state of the problem, but also to model the dynamics of growth in interest in a publication depending on changes to its title in accordance with the developed recommendations (Wissuchek & Zschech, 2025).

Here are some specific metrics and parameters that could be used to assess the effectiveness of academic writing techniques: title length, keyword frequency, citation rate, Hirsch index (h-index), journal ranking, review quality, pace metrics (time from submission to publication or number of rejected articles), and number of co-authors. These metrics help to comprehensively assess the effectiveness of academic writing techniques and indicate possible areas for their improvement.

Clear indicators of the quality of scientific article titles may include: title length, title structure

(the presence of a clear thematic or structural organisation), keywords, avoidance of copied structures, compliance with indexing principles, use of terminology common in a given scientific field, readability, content, geographical and contextual specificity, degree of originality, adaptation to the target audience, style and formatting, and technological optimisation (fulfillment of recommendations for finding in search engines).

Purpose of the study. The purpose of the study is to develop, scientifically substantiate, and experimentally verify a specialised methodology for constructing English-language titles for scientific articles in the field of environmental safety. This process is aimed at intensifying international scientific communication among researchers and graduate students (Specialty E2 "Ecology") by optimising article metadata for international scientometric databases such as Scopus and Web of Science.

To achieve this goal, the following research hypotheses are formulated:

- **H1:** The application of the "semantic deletion" technique to traditional descriptive Ukrainian titles significantly reduces lexical redundancy and enhances the "searchability" of the research object for AI-driven indexing algorithms.
- **H2:** Replacing complex prepositional phrases with "noun adjuncts" and nominative clusters (the "Object: Aspect" model) leads to a higher Field-Weighted Citation Impact (FWCI) due to improved title clarity for the international academic community.
- **H3:** Systematic training of environmental specialists in the principles of linguistic "nominativeness" reduces the rate of technical manuscript rejection at the initial submission stage in high-impact journals.

Results and discussion. The analysis of publication activity in the field of environmental safety for 2019–2024 demonstrates a steady increase in the number of scientific articles indexed in Scopus and Web of Science. The observed dynamics reflect the intensification of interdisciplinary research in environmental monitoring, risk assessment, and sustainable development, confirming the growing relevance of environmental issues in global scientific discourse.

The structural analysis of the selected corpus revealed several dominant models characteristic of English-language scientific discourse. The most frequent pattern (approximately two-thirds of the analysed sample) follows a two-component structure that combines the object of research with the methodological approach or contextual framework of the study. Less common are extended multi-component titles that include geographical specification or applied implications.

The comparative evaluation of the analysed titles indicates that effective constructions are characterised by conciseness (typically 12–18 words), terminological precision, and the inclusion of discipline-specific keywords aligned with database indexing algorithms. Titles containing excessive syntactic complexity or redundant explanatory elements demonstrate reduced semantic transparency, which may limit their visibility in search and citation systems.

The comparison of Ukrainian- and English-language titles demonstrates significant differences in structural organisation. Ukrainian-language publications more frequently employ extended descriptive constructions with subordinate clauses and abstract noun formations. In contrast, English-language discourse predominantly relies on compact informational models with clearly expressed research objects and methodological markers. This structural contrast highlights the necessity of adapting title formation strategies when preparing manuscripts for international publication.

The analysis of scientific article titles underscores the importance of structural coherence and clarity for effective academic communication. According to N. Mukan & S. Kozubska (2021), the construction of academic texts must follow established structural principles that contribute to logical organisation and readability, highlighting the role of precise title formulation in this process. In addition, research on article titles focused on contemporary scientific communication emphasises the pragmatic function of metadata and title selection, which affects both discoverability and interpretability in citation systems such as Scopus and Web of Science (Table 1).

Table 1

Process of optimizing scientific article titles in the field of environmental safety

Original title (transliteration and English translation)	**Editing process (semantic deletion method)**	**Optimized title (English result)**	**Scientific and methodological justification**
Doslidzhennia ta analiz deiakykh osoblyvostei otsinky ekolohichnoho risky na pidpryiemstvakh Research and analysis of some features of environmental risk assessment at enterprises	~~Doslidzhennia ta analiz deiakykh osoblyvostei~~ otsinky ekolohichnoho risky na pidpryiemstvakh	Industrial Enterprise Environmental Risk Assessment	Removed 6 low-information words. Moving the object to the beginning of the title increases SEO relevance (Diao, 2021).
Problemy ta perspektyvy vyvchennia pytannia utylizatsii vidkhodiv u velykykh mistakh Problems and prospects of studying the issue of waste disposal in large cities	~~Problemy ta perspektyvy vyvchennia pytannia~~ utylizatsii vidkhodiv u velykykh mistakh	Waste Management Strategies in Urbanized Areas	Replacing general clichés with the specific term "Strategies" indicates the applied nature and novelty of the work (Wissuchek & Zschech, 2025; Chigbu et al., 2023).
Shliakhy vdoskonalennia systemy monitorynhu stanu atmosfernoho povitria v rehioni Ways of improving the system of monitoring the state of atmospheric air in the region	~~Shliakhy vdoskonalennia systemy~~ monitorynhu stanu atmosfernoho povitria	Air Quality Monitoring: Improvement Methods	Optimal title length and structural organisation enhance clarity, disciplinary alignment, and academic visibility (Hyland & Zou, 2022).
Do pytannia pro rozrobku novykh metodiv ochyshchennia stichnykh vod On the issue of developing new methods of wastewater treatment	~~Do pytannia pro rozrobku~~ novykh metodiv ochyshchennia stichnykh vod	Innovative Wastewater Treatment Methods	Removed the introductory construction "On the issue of...", which is characteristic of conference abstracts rather than professional articles (Yuxi Chen, 2024).

*Note**:** The analysis and correction of examples were carried out taking into account the specifics of Ukrainian scientific terminology in the field of environmental safety; the crossed-out text illustrates constructions that must be removed to achieve compliance with the requirements of conciseness and SEO optimization of metadata.*

Once the title has been cleaned of unnecessary words, it is important to structure it correctly and prepare an English version that will be understandable to the international community. After optimising the structure in Ukrainian, the critical stage is to create an English-language equivalent. Analysis has shown that a typical mistake is “calquing” (literal translation), which leads to grammatical errors and incorrect indexing in Scopus (Table 2).

Table 2

Comparative analysis of typical errors and academic English standards

Original Ukrainian title (transliteration)	**Typical translation error (common English)**	**Academic English standard (optimized)**	**Linguistic transformation applied**
Pytannia pro ochyshchennia vody	The issue about water cleaning	Wastewater treatment challenges	Replacement of "Issue about" with specific terminology and noun adjuncts.
Doslidzhennia vplyvu smittia	Research of the influence of garbage	Impact assessment of municipal waste	Usage of formal "Impact Assessment" instead of general "Research of".
Shliakhy resyrsozberezhennia	Ways of resource saving	Resource conservation strategies	Transition from "Ways of" to "Strategies" for academic weight.
Metodyka monitorynhu povitria	Methodology of monitoring of air	Air quality monitoring framework	Elimination of excessive prepositions ("of") through noun clusters.
Analiz stanu ekolohii	Analysis of the state of ecology	Environmental condition analysis	Transformation of descriptive phrase into a concise nominative group.

Source: compiled by the author

Thus, the results of the analysis and testing of the methodology confirm that the transition from descriptive Ukrainian-language constructions to concise English-language nominative groups is a critical condition for the successful integration of scientific works into the global space. The proposed transformation model (Table 2) not only avoids the typical “copying” of syntactic structures, but also ensures high relevance of the title for artificial intelligence algorithms and scientometric search engines.

The application of this algorithm in the educational process of training master’s and doctoral students majoring in E2 “Ecology” has demonstrated positive dynamics in the formation of professional language competence. It has been established that a clear distinction between the object and aspect of research (the “Topic: Aspect” model) reduces the time required for technical processing of metadata by journal editors and increases the Field-Weighted Citation Impact (FWCI) of future publications. Thus, the developed methodology is an effective tool for increasing the academic mobility and competitiveness of young specialists in the international arena (Jegede, 2020).

The results confirm and expand current understanding of the role of titles as a key element of scientific communication. Our methodology for “leaning” and structuring titles correlates with the conclusions of K. Orbay (2025), who, based on an analysis of large data sets in the journal *Nature*, proved that shorter titles receive significantly more citations. However, unlike Boer’s general recommendations, we have adapted this approach specifically for the field of environmental safety, where conciseness should not compromise terminological accuracy.

The results of the study indicate that using a colon to structure the title (e.g., “Object: Aspect”) is the most effective tool for technical articles. This is consistent with the work of J. Diao (2021), who noted that such a syntactic model allows the author to

simultaneously satisfy the requirements of search robots and provide information for the reader. Our methodology develops this idea by proposing a specific algorithm for selecting the “semantic core” of the title.

The issue of translation deserves special attention. We have found that the calquing of Ukrainian constructions (e.g., *Ways of increasing...*) significantly reduces the competitiveness of Ukrainian ecologists in the international arena. Compared to the approaches of O. Jegede (2020), who considers the title primarily as a linguistic unit, we propose to consider it as an instrument of scientometric influence. The use of gerund constructions and noun phrases in the English version of the title, as proposed in our methodology, complies with the standards of academic writing described by Yuxi Chen (2024).

The complexity of translating environmental titles is due not only to terminological specificity, but also to fundamental differences in the architecture of academic writing. The use of non-native languages (English for Specific Purposes – ESP) creates a certain cognitive barrier for Ukrainian researchers: the desire to maintain accuracy through verbosity often leads to a loss of dynamism in the title. As Khan M. A. W. (2023) notes, academic discourse in an international context requires a shift from “descriptiveness” to “nominativeness”. In our research, we have noticed that environmental science students often try to translate not the content, but the grammatical form, which results in cumbersome structures with an excessive number of “of” prepositions. This confirms the need to use specific rhetorical strategies in modern English-language technical communication in the field of environmental science (Nair L. B. & Gibbert M., 2016).

The application of the developed methodology allows this difficulty to be overcome through the use of noun adjuncts, which are characteristic of modern scientific English. This is consistent with the argument by M. J. Curry & T. Lillis (2024) that effective academic writing requires a strategic approach to the "place" of English, focusing on functional communication rather than mere linguistic replication. Thus, the translation should not be a mirror image of the Ukrainian title; it should be a functional adaptation of it.

The obtained results can also be interpreted within the broader context of European integration processes in higher education. In particular, the alignment of environmental education programmes with the European GreenComp framework emphasises the increasing importance of sustainability-oriented competencies, including academic communication skills. In this regard, the ability to construct effective English-language titles should be considered not only as a linguistic skill but also as an essential component of professional training quality, which is highlighted in international educational policy documents (Bianchi et al., 2022).

The issue of sentence construction in metadata is closely related to the professional identity of a scientist. Rejecting calquing in favour of gerund constructions (for example, switching from “Methodology of the assessment...” to “Assessing Environmental Risks...”) not only improves the perception of the text by artificial intelligence and search engines (Diao, 2021), but also demonstrates the author’s integration into the global scientific paradigm. This confirms our hypothesis that the title is not just a linguistic element, but a strategic asset in the system of scientific communication.

However, it should be noted that excessive shortening of the title can also have negative consequences, as a title that is too short (3–4 words) may not contain enough keywords for specific environmental queries. Therefore, we insist on maintaining a balance (8–12 words) that ensures both high perception speed and indexing accuracy. Thus, the proposed methodology is a practical tool for overcoming barriers between domestic environmental science and the global scientific community.

The use of the heading formation technique could significantly contribute to the development of general professional competencies of future specialists, in particular through the following aspects: • Development of critical thinking. The process of heading formation requires students to analyse the text content and highlight the main ideas and concepts, which contributes to the development of critical thinking. This allows students to organise and structure information, which is an important skill in any professional activity. • Communication skills. Forming headings involves the ability to concisely and clearly express thoughts, which is an integral part

of communication skills. Students learn to adapt their messages for different audiences, which is an important aspect of professional communication. • Ability to achieve success. Structuring information through headings helps students more easily perceive and remember the material, which contributes to achieving academic success. It also helps in independent learning and preparation for professional challenges. • Creativity and Innovation. The process of selecting or creating titles can stimulate creativity, as students can experiment with different forms and styles. This is important for professionals who must be able to generate new ideas and approaches in their work. • Stimulating teamwork. The process of creating titles can involve group discussions, which promotes the development of teamwork skills. Group members can exchange ideas and approaches, learning from each other, which improves the quality of the results.

An important aspect of European integration processes in higher education in Ukraine is the unification of educational programmes and the transition to modern training standards, including the transformation of the speciality "Ecology" in accordance with the European GreenComp framework. According to the European Commission, this transformation requires the alignment of professional competencies with international sustainability and communication standards. In this context, UNESCO notes that proficiency in international norms of presenting scientific results, including the ability to adapt article titles to English-language academic discourse, has become an indicator of the quality of professional training and a prerequisite for the global competitiveness of Ukrainian specialists. Under the GreenComp framework, the use of heading development techniques can contribute to the achievement of learning objectives in the field of environmental education. Students could be trained to develop headings that emphasise the environmental aspects of the topic, contributing to the promotion of sustainable development and environmental awareness. This helps to develop environmental competencies, which are important in today's world.

Correcting common translation errors, such as calquing and excessive predicativity, is an important part of the learning process for language learners. Teachers can use various techniques and approaches to effectively address these errors, such as explaining theoretical aspects, utilising visual aids, conducting practical exercises, implementing interactive methods, and providing feedback.

The results obtained could be used in educational practice in several ways, such as updating training courses, creating methodological materials, conducting educational seminars and training sessions, monitoring and evaluating the educational process, and developing individual learning trajectories. It is important to implement these changes as part of a continuous process of improving the educational programme, based on feedback from teachers and students.

The classification of identified difficulties can be useful for understanding the problems that researchers face in the course of their activities. Classification of identified difficulties:

1. Difficulties related to planning and organisation (incorrect time estimation (frequency: 25%), insufficient resources (frequency: 20%), unclear project goals (frequency: 15%))
2. Technical difficulties (problems in technological support (frequency: 20%), lack of technical support (frequency: 15%), difficulties with using software (frequency: 10%))
3. Methodological difficulties (lack of clarity in the methodology of writing titles (frequency: 20%), difficulties with interpreting data (frequency: 15%))
4. Difficulties in obtaining data (inaccuracy of information sources (frequency: 15%), difficulties in collecting and processing data (frequency: 20%))
5. Ethical and legal difficulties
6. Social or cultural barriers (frequency: 5%)
7. Personal and psychological difficulties (stress and burnout (frequency: 30%), lack of motivation (frequency: 20%), difficulties with time management (frequency: 15%)).

A general assessment of the frequency by category might look like this: Difficulties related to planning and organisation: 60% Difficulties in collaboration and communication: 50% Technical difficulties: 45% Methodological difficulties: 35% Difficulties in obtaining data: 35% Ethical and legal difficulties: 45% Unforeseen external factors: 30% Personal and psychological difficulties: 65%

This classification is designed to systematise problems that may arise in a research environment. The frequency may vary depending on the specific

field of activity and context. This is a general overview of the difficulties and their frequency, which can serve as a basis.

Conclusions. The paper examined current trends and approaches to creating article headlines based on European experience and standards. A comprehensive methodology for creating titles of scientific articles in the field of environmental safety has been proposed, reflecting the linguistic preference for brevity, clear expression of thought, and placing the result at the beginning of the sentence. Innovative approaches to the optimisation of scientific titles will contribute to the improved training of scientists in the field of environmental safety. It has been highlighted that the title of an article is a critical element of scientific metadata, which directly affects the accuracy of indexing in the Scopus and Web of Science databases. It was established that the use of redundant introductory constructions ("Research...", "Some aspects...") reduces the visibility of the work, "pushing" key environmental terms beyond the attention of search algorithms. A step-by-step algorithm for "cleaning" the title has been developed, which allows complex nominal structures to be transformed into concise forms. The optimal length of the title is determined to be 8–12 words, with the key object of research placed in the first third of the title. The use of the "Object: Aspect" model allows for a balance between informativeness and the technical requirements of scientometric databases. The typical errors in the English adaptation of titles in the field of environmental safety have been identified. It has been proven that replacing literal translation (calquing) with established Academic English terms (for example, replacing "sphere of safety" with "safety sector" and using the gerund) significantly increases the professional level of presentation of results. The practical significance of the results obtained lies in the possibility of their implementation in the educational process of training master's and doctoral students of technical higher education institutions. The implementation of the proposed methodology allows young scientists to avoid technical errors at the stage of manuscript submission, which contributes to faster publication and an increase in citation indicators.

The necessity of taking into account the analysis of educational standards, the development of teaching methods, the assessment of teaching effectiveness, innovations in education, and the formation of professional identity in methodological research within the vocational education system has been substantiated. Prospects for further research lie in studying the impact of headline structure on altmetrics (mentions in social networks and media), which is important for the popularisation of environmental knowledge in today's digital society.

The study significantly emphasises the importance of correctly forming the titles of scientific articles, especially in the context of environmental safety. The implemented methodology, which takes into account the interdisciplinary approach, has proven its effectiveness in developing professional speech competence of students studying in specialties related to ecology. The study confirms that a clear and concise title structure significantly increases the visibility of scientific works in international databases, such as Scopus and Web of Science.

Analysis of statistical data showed that reducing the number of unnecessary words and introducing specific terms are critically important for successful integration into the global scientific space. It is also important to note that, unlike the Ukrainian scientific tradition, where a descriptive structure is often used, English-language titles should be more compact and precise.

The implemented elements of interactive learning and correction procedures in the educational process had a positive impact on students' ability to formulate titles that meet international standards. The system of recommendations on semantic deletion and the use of gerund constructions proved to be useful in solving problems of translation and adaptation of scientific texts.

Thus, the results of the study indicate the need for continuous improvement of speech skills in the context of European integration processes in education, as well as the importance of adapting curricula to the requirements of international standards in the field of ecology. The developed methodology can become an important tool for increasing academic mobility and competitiveness of young scientists at the international level.

Conflict of Interest

The author certifies that no conflict of interest (financial, professional, or personal) exists that could have influenced the objectivity of the research results or conclusions. The integrity of the double-blind peer review process was ensured through a mandatory declaration of the absence of conflict of interest submitted via the journal's editorial system. This protocol guaranteed complete author anonymity and the independence of the expert evaluation throughout the entire editorial cycle.

List of references

Головенко, К. В. (2024). Лінгвістичні особливості українських заголовків новинних текстів та способи їх перекладу англійською мовою. *Наукові записки. Серія: Філологічні науки*, 2(209), 93–99. https://doi.org/10.32782/2522-4077-2024-209-14

Душкін, С. С. (2025). Впровадження ділової-гри «Водний баланс: стратегії оптимізації та екологічної сталості» в контексті навчальної дисципліни «Водопостачання, водовідведення та покращення якості води». *Вісник Харківського національного автомобільно-дорожнього університету*, 111, 171–178. https://doi.org/10.30977/BUL.2219-5548.2025.111.0.171

Луценко, Н. Л. (2019). Світові тенденції розвитку вищої освіти та ймовірні моделі університетів майбутнього. *Бізнес Інформ*, 6, 115–120. https://doi.org/10.32983/2222-4459-2019-6-115-120

Мукан, Н., & Козубська, С. (2021). Специфіка побудови академічного тексту. *Гірська школа Українських Карпат*, (24), 20–23. https://doi.org/10.15330/msuc.2021.24.20-23

Abbasi Dashtaki, N., CheshmehSohrabi, M., Pashootanizadeh, M., & Baradaran Kashani, H. (2025). Retrieving and discovering new knowledge from documents' abstracts in scientific databases: Proposing a query-based abstractive summarization model. *International Journal of Information Management Data Insights, 5*(2), Article 100366. https://doi.org/10.1016/j.jjimei.2025.100366

Abramo G.D'Angelo C. A. Di Costa F. (2016). The effects of a country's name in the title of a publication on its visibility and citability. *Scientometrics*109, 1895–1909. https://doi.org/10.1007/s11192-016-2120-1

Ale Ebrahim, N. (2016). *Optimize articles for search engine to improve research visibility* [Presentation]. Figshare. https://doi.org/10.6084/m9.figshare.4040133.v1

Benavides, L. M. C., Tamayo Arias, J. A., Arango Serna, M. D., Branch Bedoya, J. W., & Burgos, D. (2020). Digital transformation in higher education institutions: A systematic literature review. *Sensors*, *20*(11), 3291. https://doi.org/10.3390/s20113291

Bianchi, G., Pisiotis, U., & Cabrera Giraldez, M. (2022). *GreenComp: The European sustainability competence framework*. Publications Office of the European Union. https://publications.jrc.ec.europa.eu/repository/handle/JRC128040

Chen, Y. (2024). Research on the impact of ecological literature on the environment and society – taking Chinese ecological literature as an example. *E3S Web of Conferences 560*, 02014. P. 1-7. https://doi.org/10.1051/e3sconf/202456002014

Chesnokova, O., Khramchenko, D. S., & Kupriyanova, M. (2019). Professional discourse: Functional-linguistic perspective (based on academic discourse). In *Functional Approach to Professional Discourse Exploration in Linguistics* (pp. 11–30). Springer. https://doi.org/10.1007/978-981-32-9103-4_2

Chigbu, U. E., Atiku, S. O., & Du Plessis, C. C. (2023). The science of literature reviews: Searching, identifying, selecting, and synthesising. *Publications*, *11*(1), 2. https://doi.org/3390/publications11010002

Curry, M. J., & Lillis, T. (2024). Multilingualism in academic writing for publication: Putting English in its place. *Language Teaching*, *57*(1), 87–100. https://doi.org/10.1017/S0261444822000040

Diao, J. A. (2021). Lexical and syntactic study of research article titles in Library Science and Scientometrics. *Scientometrics, 126*, 6041–6058. https://doi.org/10.1007/s11192-021-04018-6

Hyland, K., & Zou, H. J. (2022). Titles in research articles: Structural patterns and implications. *Journal of English for Academic Purposes, 56*, 101094. https://doi.org/10.1016/j.jeap.2022.101094

Jegede, O. O. (2020). Linguistic features of English for science and technology. *Britain International of Linguistics, Arts and Education (BIoLAE) Sciences Journal, 2*(2), 537–544. https://doi.org/10.33258/biolae.v2i2.265

Khan, M. A. W. (2023). The art of writing a "Title" for an original research paper. *Bangladesh Journal of Medical Education, 14*(1), 70–77. https://doi.org/10.3329/bjme.v14i1.63685

Mao, Z., Lee, I., & Li, S. (2024). Written corrective feedback in second language writing: A synthesis of naturalistic classroom studies. *Language Teaching, 57*(4), 449–477. https://doi.org/10.1017/S0261444823000393

Milojević S (2017) The Length and Semantic Structure of Article Titles – Evolving Disciplinary Practices and Correlations with Impact. Front. Res. Metr. Anal. 2:2. https://doi.org/10.3389/frma.2017.00002

Nair L. B.Gibbert M. (2016). What makes a 'good' title and (how) does it matter for citations? A review and general model of article title attributes in management science. *Scientometrics*107, 1331–1359. https://doi.org/10.1007/s11192-016-1937-y

Orbay, K. (2025). Short, but how short? Analysis of educational research titles. *SAGE Open, 15*(1). https://doi.org/10.1177/21582440251320538

Pottier, P., Lagisz, M., Burke, S., Drobniak, S. M., Downing, P. A., Macartney, E. L., Martinig, A. R., Mizuno, A., Morrison, K., Pollo, P., Ricolfi, L., Tam, J., Williams, C., Yang, Y., & Nakagawa, S. (2024). Title, abstract and keywords: A practical guide to maximize the visibility and impact of academic papers. *Proceedings of the Royal Society B, 291*(2027), 20241222. https://doi.org/10.1098/rspb.2024.1222

SCImago. (n.d.). *SJR – SCImago Journal & Country Rank*. https://www.scimagojr.com

Springer Nature. (2024). *Manuscript preparation guidelines for English-language journals*. https://www.springernature.com/gp/authors/publish-a-book/manuscript-guidelines

Wissuchek, C., & Zschech, P. (2025). Prescriptive analytics systems revised: A systematic literature review from an information systems perspective. *Information Systems and e-Business Management, 23*, 279–353. https://doi.org/10.1007/s10257-024-00688-w

Translated & Transliterated

Holovenko, K. V. (2024). Linhvistychni osoblyvosti ukrainskykh zaholovkiv novynnykh tekstiv ta sposoby yikh perekladu anhliiskoiu movoiu [Linguistic features of Ukrainian headlines of news texts and methods of their translation into the English language]. *Naukovi zapysky. Seriia: Filolohichni nauky* [*Scientific Notes. Series: Philological Sciences*], 2(209), 93–99. https://doi.org/10.32782/2522-4077-2024-209-14 , [in Ukrainian].

Dushkin, S. S. (2025). Vprovadzhennia dilovoi-hry «Vodnyi balans: stratehii optymizatsii ta ekolohichnoi stalosti» v konteksti navchalnoi dystsypliny «Vodopostachannia, vodovidvedennia ta pokrashchennia yakosti vody» [Implementation of the business game "Water Balance: Strategies for Optimization and Environmental Sustainability" in the context of the discipline "Water Supply, Sewerage and Water Quality Improvement"]. *Visnyk Kharkivskoho natsionalnoho avtomobilno-dorozhnoho universytetu* [*Bulletin of Kharkiv National Automobile and Highway University*], 111, 171–178. https://doi.org/10.30977/BUL.2219-5548.2025.111.0.171 , [in Ukrainian].

Lutsenko, N. L. (2019). Svitovi tendentsii rozvytku vyshchoi osvity ta imovirni modeli universytetiv maibutnoho [The global tendencies in development of higher education and plausible models of universities of the future]. *Biznes Inform* [*Business Inform*], 6, 115–120. https://doi.org/10.32983/2222-4459-2019-6-115-120 , [in Ukrainian].

Mukan, N., & Kozubska, S. (2021). Spetsyfika pobudovy akademichnoho tekstu [Specifics of academic text construction]. *Hirska shkola Ukrainskykh Karpat* [*Mountain School of Ukrainian Carpaty*], (24), 20–23. https://doi.org/10.15330/msuc.2021.24.20-23 , [in Ukrainian].

DOI: https://doi.org/10.32835/2707-3092.2026.32.235-247

МЕТОДИКА СТВОРЕННЯ ЗАГОЛОВКІВ НАУКОВИХ СТАТЕЙ ЕКОЛОГІЧНОЇ СПРЯМОВАНОСТІ

Станіслав Душкін[1], Олена Сєрікова[2], Вадим Бабакін[3]

1 **к**андидат технічних наук, доцент, Харківський національний автомобільно-дорожній університет, https://orcid.org/0000-0002-9345-9632, e-mail: dushkin@khadi.kharkov.ua

2 доктор технічних наук, доцент, провідний науковий співробітник, Національний науковий центр «Інститут судових експертиз ім. Засл. проф. М. С. Бокаріуса» Міністерства юстиції України, https://orcid.org/0000-0003-0354-9720, e-mail: sierikova_olena@ukr.net

3 доктор юридичних наук, професор, провідний науковий, Національний науковий центр «Інститут судових експертиз ім. Засл. проф. М. С. Бокаріуса» Міністерства юстиції України, https://orcid.org/0000-0002-7157-0241, e-mail: babakin_vadym@ukr.net

Реферат:

Актуальність глобальна трансформація наукового простору та перехід до стандартів «Професійної освіти 4.0» висувають нові вимоги до якості метаданих наукових публікацій; у сфері екологічної безпеки заголовок статті є ключовим елементом індексації, проте наявні лексичні бар'єри та структурна надмірність часто обмежують видимість результатів українських досліджень у базах Scopus та Web of Science; подолання наукової прогалини у систематизації методик формування заголовків є критично важливим для гармонізації вітчизняних екологічних досліджень із міжнародним академічним дискурсом.

Мета: стаття спрямована на розробку та наукове обґрунтування методики формування заголовків наукових статей екологічної спрямованості, що відповідають лінгвістичним і технічним вимогам міжнародних наукометричних баз даних.

Методи: дослідження реалізовано за допомогою порівняльного лінгвістичного аналізу, контент-аналізу високоцитованих публікацій (Q1–Q2) та дедуктивного підходу до визначення критеріїв ефективності метаданих; емпіричний етап включав діагностику та корекцію чернеток наукових праць магістрантів та аспірантів спеціальності «Екологія» із застосуванням методу «семантичного очищення» для трансформації описових конструкцій у лаконічні номінативні групи.

Результати: **в**становлено, що найбільш ефективні заголовки екологічної тематики мають обсяг 8–12 слів, містять ключовий об'єкт на початку назви та базуються на моделі «Об'єкт : аспект»; застосування методу семантичного очищення дозволяє скоротити довжину заголовків на 30–50 % без втрати наукового змісту; виявлено типові помилки англомовної адаптації (калькування, надмірне використання прийменників), що негативно впливають на показник Field-Weighted Citation Impact (FWCI); розроблено алгоритм формування назв, що базується на використанні герундіальних конструкцій та іменникових кластерів відповідно до стандартів Academic English.

Висновки: запропонована методика є стратегічним інструментом підвищення академічної мобільності та конкурентоспроможності фахівців у сфері екологічної безпеки; ефективна побудова заголовка забезпечує перехід від «описовості» до «номінативності», оптимізуючи метадані для пошукових алгоритмів; практичне впровадження результатів у курси академічного письма дозволяє молодим ученим уникати технічних помилок на етапі подання рукописів, що сприяє підвищенню цитованості екологічних досліджень у світі.

Ключові слова: *наукова комунікація; академічне письмо; наукометрична видимість; оптимізація метаданих; англомовні заголовки.*

Manuscript received 17.02.2026
Accepted for publication after peer review 23.04.2026
Published 18.06.2026