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USING CORPORATE MECHANISMS TO IMPROVE ACADEMIC ENGLISH LANGUAGE PROFICIENCY AMONG POSTGRADUATE STUDENTS: IMPACT ON THE LEARNING PROCESS

Abstract. A high level of proficiency in academic English is a prerequisite for the successful functioning of postgraduate students in the scientific and educational environment. This includes an accurate presentation of scientific ideas in both written and oral forms, presentation of research results at international events, access to publications in world scientometric databases and the ability to publish one's work. In the modern educational context, technologies, in particular concordancers, play an important role in developing academic foreign language competence and forming independent work skills. The study aimed to assess the effectiveness of the use of concordancers (AntConc and Lextutor) in the formation of academic foreign language competence of postgraduate students in the speciality Agronomy and to compare them with alternative means - online resources and applications based on artificial intelligence (Academic Phrasebank, Google Scholar Tools, Grammarly, ChatGPT). The study involved 30 first-year postgraduate students divided into experimental and control groups. The methodology included diagnostic (pre-test) and final (post-test) testing, which covered theoretical questions, analysis of a fragment of a scientific text and writing an essay in a scientific style. Statistical processing of the results was carried out using the Student's t-test. In addition, students filled out a questionnaire with open and closed questions, which were analyzed quantitatively and using the open coding method. The study results showed a significant improvement in academic writing in the experimental group, which confirms the effectiveness of using corpus tools in teaching academic English. Most students highly appreciated the capabilities of AntConc, in particular the analysis of terminology, grammar and stable expressions. At the same time, some respondents noted the complexity of the interface and the need for additional methodological materials. Therefore, it is advisable to create step-by-step instructions, involve teachers of computer disciplines in the educational process and increase the number of practical classes.

Keywords: concordancers; professional foreign language; postgraduate students; agronomy; grammatical structures; terminology; fixed expressions; Grammarly, ChatGPT

Introduction. The final result of studying at the third educational and scientific level to obtain a Doctor of Philosophy degree is the successful defence of dissertation research. Even though most works are written in Ukrainian, academic English knowledge is an essential prerequisite. This applies to understanding English-language scientific texts and their further use in the scientific work of a postgraduate student, writing English-language annotations for professional publications, participating in international events, etc. The requirement for mandatory publication of scientific research results in journals indexed in the Scopus or Web of Science databases is formally available. Still, it can be replaced by professional Ukrainian publications of category B. In addition, further scientific activity involves constantly improving written competence in foreign languages for practical work and career growth.

Reforms of the Ministry of Education and Science of Ukraine, in particular the introduction of a mandatory foreign language exam for postgraduate students and the establishment of the threshold score of the TZNK at 160 points, contributed to increasing the level of foreign language proficiency. Educational and professional programs in the discipline have different names in higher education institutions: "Foreign Language in Scientific, Professional and Interpersonal Communication", "English Academic Writing", "Scientific Communication in English", "Foreign Language for Professional Purposes", "Foreign Language for Academic Purposes". Thus, the variability of the names of educational and professional programs in a foreign language in different higher education institutions reflects

their focus on developing scientific, professional and academic communication. This indicates the multidimensionality of approaches to teaching the discipline, particularly the emphasis on academic writing, professionally oriented vocabulary and intercultural communication. These are integral to preparing higher education students for effective integration into the international educational and scientific space. The introduction of new technologies, in particular the use of concordancers, plays a key role in increasing the efficiency of the educational process of postgraduate students, contributing to the improvement of academic writing and the development of independent work skills throughout the entire study period. The educational and scientific level of the third degree involves studying the discipline "Foreign Language for Professional Purposes" during the first year of study, which covers 6 ECTS credits (180 hours). The syllabus of this discipline includes topics related to international scientific communication, preparation of scientific publications, and participation in conferences and grant programs, which requires graduate students not only to master professional terminology but also to structure their scientific texts competently. Concordancers are a powerful tool that allows you to analyze the use of words and expressions in large corpora of texts, identify typical syntactic and lexical structures of academic writing, and avoid errors in formulating scientific theses and arguments. Their use contributes to such program learning outcomes as the ability to freely present and discuss research results in a foreign language, qualified writing of scientific articles for international publications, and effective participation in international scientific projects and seminars. Since postgraduate students are actively engaged in research activities for three years, integrating concordancers into the educational process allows them to improve their language competencies independently after completing the discipline. This contributes to increasing academic literacy and compliance of scientific texts with international standards and strengthens Ukrainian researchers' competitiveness in the global scientific space.

Literature review. Studies on using corpus methods in teaching academic writing confirm their effectiveness in improving the quality of students' scientific texts, developing language competence and adapting curricula to the real needs of education seekers. Weber (2001) proves that combining concordances with a genre approach improves academic writing. Using corpus methods allows postgraduate students to analyze scientific texts more deeply, which helps them prepare for writing articles in international publications and communicate more effectively in the scientific community. Julia Hüttner (2010) emphasizes the importance of extended genre analysis, which combines the traditional genre approach with corpus tools. This allows for a systematic study of the features of student texts and their differences from expert academic writing. The introduction of corpus methods into curricula helps to adapt the teaching of English for Academic Purposes (EAP) following the specific genre features of student works. Boulton (2016) highlights the broad potential of corpus linguistics for teaching ESP and EAP. Corpus technologies create frequency lists of words and analyze terminology and discursive features of academic writing, contributing to a deeper understanding of scientific communication's genre and stylistic norms. Karpenko-Seccombe (2018) focuses on the practical use of concordancers, which allow students to study vocabulary and grammar in real-world contexts. Using such tools helps to improve academic writing style, promotes the development of independent language analysis and forms skills for working with scientific texts. Argyroulis (2022) investigates students' motivation to use corpus technologies in teaching ESP. His results indicate that working with corpora is more effective and engaging for students than traditional methods. Using concordancers increases motivation and promotes autonomous learning, which is vital for developing academic literacy. The literature review confirms that using corpus methods and concordancers is a practical approach to teaching academic writing. These methods help students better understand academic texts' linguistic and genre features, increase learning motivation, and contribute to developing skills for independent language analysis. In the future, integrating corpus technologies into curricula can significantly improve

the quality of academic writing and scientific communication. Despite numerous studies confirming the effectiveness of the use of concordancers in teaching academic English (Weber, 2001; Hüttner, 2010; Boulton, 2016; Karpenko-Seccombe, 2018; Argyroulis, 2022), some aspects of their use by graduate students remain insufficiently studied. In particular, it is interesting to find out whether graduate students use these platforms to work independently with text material and, if so, what difficulties arise. Investigating whether higher education students need additional clarification and guidance is also essential. Furthermore, most existing research focuses on the humanities and social sciences. Instead, in this study, we aim to evaluate the effectiveness of using concordancers in teaching postgraduate students in the speciality of "Agronomy".

This article investigates the impact of using concordances on the development of academic language competence of postgraduate students of higher educational institutions, particularly in Agronomy. The article examines the methodology of using concordances, particularly AntConc and Lextutor, to improve the writing of scientific papers in a foreign language compared to alternative online resources and artificial intelligence tools (such as Grammarly and ChatGPT). In addition, the article offers practical tasks for using concordances based on accurate scientific articles analyzed within the framework of the study. The article also provides recommendations for improving the teaching methodology of postgraduate students, particularly regarding integrating concordances into curricula and developing independent work of postgraduate students with texts.

The methodological basis. The study's methodology involved a four-month pedagogical experiment with 30 first-year postgraduate students majoring in Agronomy, divided into experimental and control groups. The experimental group used concordancers (AntConc and Lextutor), while the control group worked with online resources and AI tools (Academic Phrasebank, Google Scholar, Grammarly, ChatGPT). Both groups completed pre-and post-tests to assess the approach's effectiveness, and the data were analyzed using quantitative (Student's t-test) and qualitative methods (survey and open coding).

Results of the research.

The initial stage of the experiment. Diagnostic and final testing was conducted with students of both groups. The diagnostic testing aimed to determine the level of academic English writing among first-year postgraduate students and consisted of theoretical and practical. The theoretical part contained three questions with a choice of one correct answer:

1. Which of the following expressions best describes the beginning of a scientific article?
2. Which grammatical phenomenon is typical of the academic style?
3. What does the term "collocation" mean?

In the practical part, students had to read an excerpt from a scientific publication and select five agronomic terms, five fixed phrases and two types of grammatical structures used in the scientific style. As a result of the practical part of the test, students had to write an essay on the topic of a master's thesis of 200-250 words in academic style.

The PhD students of the experimental group received links to YouTube tutorials hosted by Laurence Anthony, Monika Bednarek, and Umair Ibne Abid in advance on using concordancers to improve academic writing skills. Then, during a practical session, the postgraduate students underwent a short training on working with the Lextutor and AntConc platforms. Students in the control group used resources such as Academic Phrasebank, Google Scholar Tools, and AI applications (Grammarly, ChatGPT) with which they were familiar.

Main part of the experiment. Four agronomic articles published in WoS and Scopus journals which indicates their high level of academic writing were selected for the concordancers (Amuza & Leonard, 2024; Avram et al., 2024; Wang et al., 2024; Rizan et al., 2024). One article was processed for two weeks using AntConc in the independent work of

postgraduate students. Since the students had two pairs of English language for professional orientation each week, every fourth pair was devoted to the following tasks:

1. Searching the corpus for agronomic terms and analyzing their context and grammatical features.
2. Identifying stable expressions in articles.
3. Searching for synonymous expressions in the corpus.
4. Inputting grammatical constructions characteristic of scientific articles into AntConc and analyzing them.
5. Creating identical constructions based on the examples found.
6. Enter your essay into the application and compare it with the analysed article.
7. Analyzing the frequency of use of academic expressions in your text compared to the article being studied.

For the control group, tasks were also developed using the above-mentioned articles.

1. Find and write 10 phrases to introduce the topic from the Introducing Work section (Academic Phrasebank).
2. Compare the phrases with those used in the articles (Amuza & Leonard, 2024; Avram et al., 2024).
3. Apply the most commonly used phrases to create your essay.
4. Upload your essay to Grammarly. Record and analyze the suggested corrections.
5. Upload the essay to ChatGPT and enter a request to improve the essay to the level of, say, another publication (Wang et al., 2024).
6. Use ChatGPT to list the most commonly used phrases in academic writing for different parts of scientific publications.

The final stage of the experiment. The final test was conducted to identify the improvement or deterioration of academic writing skills after 4 months of work. The test consisted of three parts. The theoretical part contained open-ended questions:

1. How does the structure of a paragraph change in an academic text?
2. What expressions are used to present the results?
3. Choose the correct paraphrased version of a complex sentence.
4. Write 10 commonly used phrases in academic writing for different parts of scientific publications.

The second part involved the analysis of a scientific text: terminology, academic clichés, and grammatical patterns.

The third part of the test involved tasks on comparative analysis. The tasks in this part of the test differed for the experimental and control groups. The experimental group had to upload their essay to AntConc, determine the frequency of use of phrases similar to the article (e.g. Wang et al., 2024) and compare it with the results of the previous analysis.

The control group had to upload their essay to Grammarly/ChatGP, analyze the suggested corrections, and use ChatGPT to identify common phrases and check their text for compliance with the academic style.

The assessment of tasks in the pre-and post-test was carried out according to criteria covering knowledge of terminology, grammar, academic structures and the ability to apply them in practice. The assessment criteria are presented in Table 1.

Table 1

The assessment criteria for pre-and post-test tasks

Part of the text	Score	Assessment criteria
Theoretical part	20	5 points for the correct answer
Analysis of paper fragment	30	Terminology (10), fixed phrases (10), grammar (10)

Practical task (essay)	50	Structure (introduction, body, conclusion), Use of academic expressions, Agro-specific terminology, Grammatical correctness, Lexical accuracy and style

The mean test score was calculated using Excel and the function =AVERAGE(A1:A15). The test results for the experimental and control groups are shown in Fig. 1.

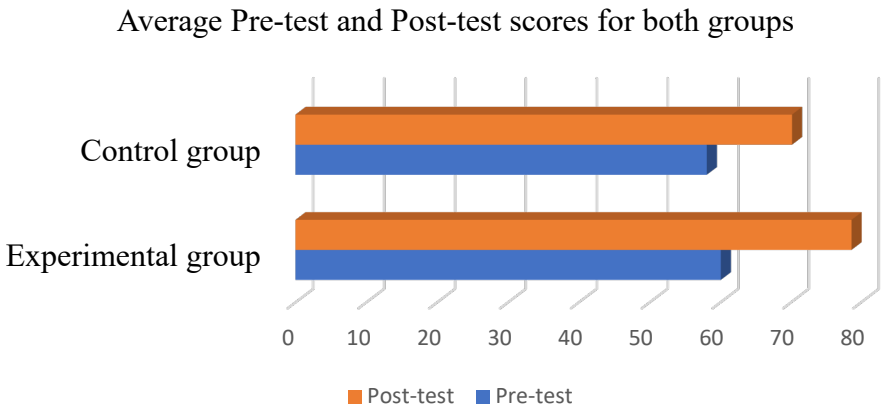

Fig. 1. Average scores for pre-and post-test

In order to find out whether there is a statistically significant difference between the results of the mean scores of the two groups before and after the experiment, we used the Student's t-test. The results of the statistical analysis are given in Table 2.

Table 2

The results of the statistical analysis

Comparison	t-value	p-value	Conclusion
Pre-test Exp. Vs Contr.	1.22	0.23	The difference is significant.
Post-test Exp. Vs Contr.	4.97	0.00003	The difference is significant.

At the beginning of the experiment, both groups had a relatively similar level of knowledge ($p = 0.23 > 0.05$). After the experiment, students who worked with concordancers showed significantly better results ($p = 0.00003 > 0.05$). This indicates the effectiveness of using AntConc and Lextutor in forming academic foreign language competence.

To assess the effectiveness of using concordancers in teaching academic writing, we also used a test with the students of the experimental group consisting of four closed and three open questions. A quantitative approach was used to analyze the results of the closed questions, and an open coding method was used to analyze the open questions in order to identify recurring themes in the responses.

The results of the survey are shown in Figures 2–5. The vast majority of postgraduate students (73%) in their responses to the first question noted that using the application improved their foreign language academic writing (40% noted a significant improvement, 33% - a slight improvement) (Fig. 2). These results confirm the effectiveness of corpus tools in developing postgraduate students' academic speech in foreign languages. At the same time, 20% of respondents did not experience significant changes, which may indicate individual difficulties in using concordancers or insufficient time to master them.

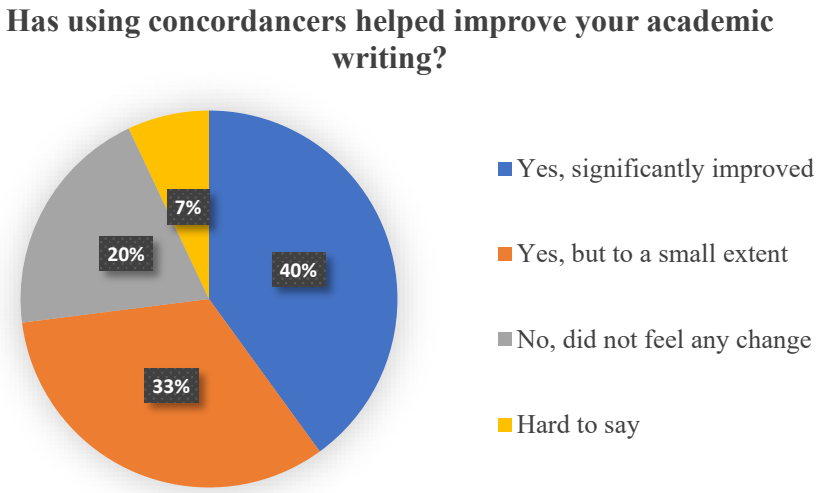

Fig. 2. PhD student's responses to Question 1

When asked about the difficulties they encountered while working with concordancers, 29% of graduate students noted that they had difficulty interpreting corpus data, 24% of respondents had difficulty understanding the tools and capabilities of the platform, and 19% of respondents admitted that they faced the problem of lack of time.

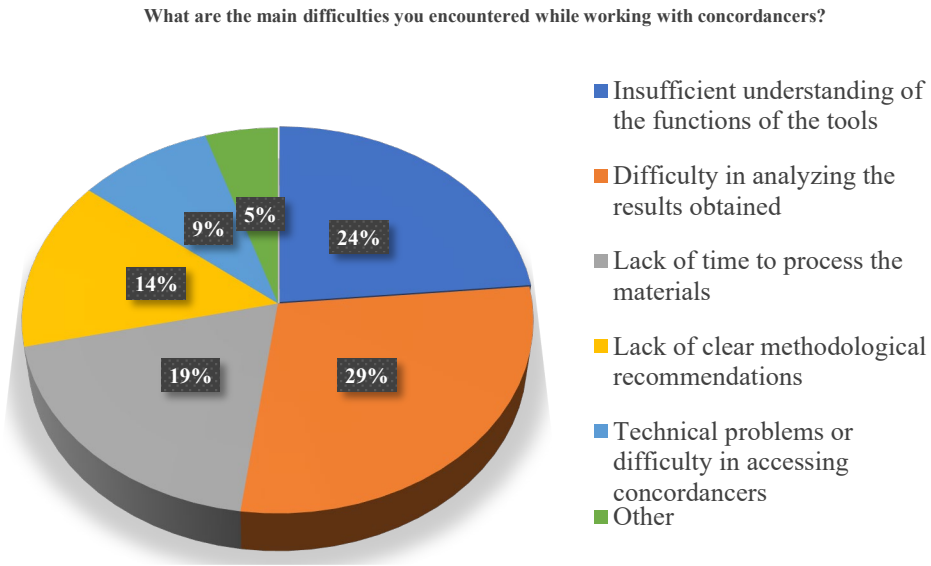

Fig. 3. PhD student's responses to Question 2

When asked whether additional explanations and materials are needed for practical work with concordancers (Fig. 4), 74% of respondents gave a positive answer. In particular, 47% of students indicated needing more practical tasks and exercises when working with corpora. In comparison, 27% of respondents noted needing more detailed instructions and recommendations for working with AntConc.

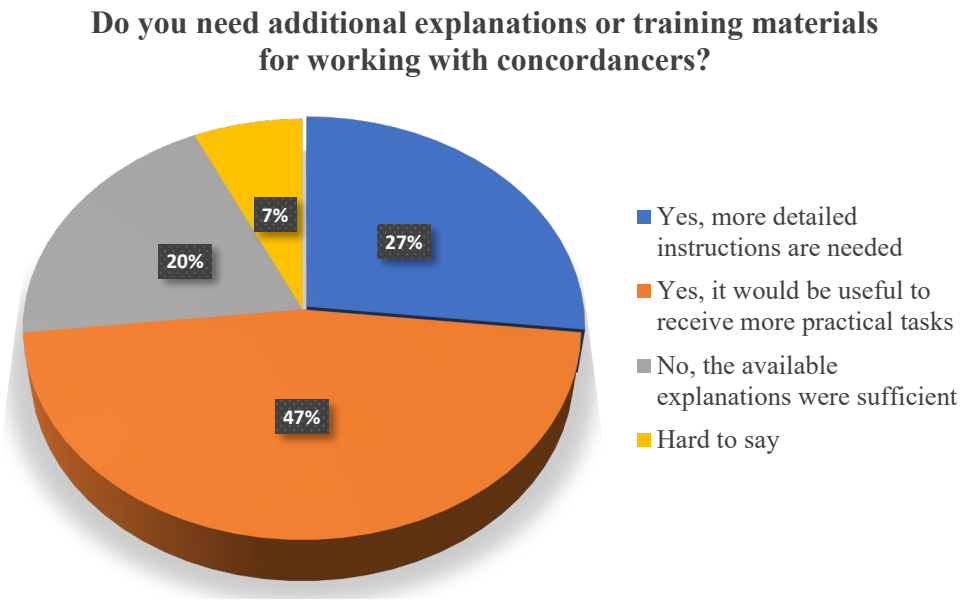

Fig. 4. PhD student's responses to Question 3.

The fourth question concerned the prospects for the further use of corpus tools to develop foreign-language academic writing. Significantly, only 7% of postgraduate students denied the possibility of using AntConc in their further scientific activities. At the same time, 73% of respondents plan to use concordancers (33% - regularly, 40% - from time to time), and 20% intend to work with corpus tools only when necessary.

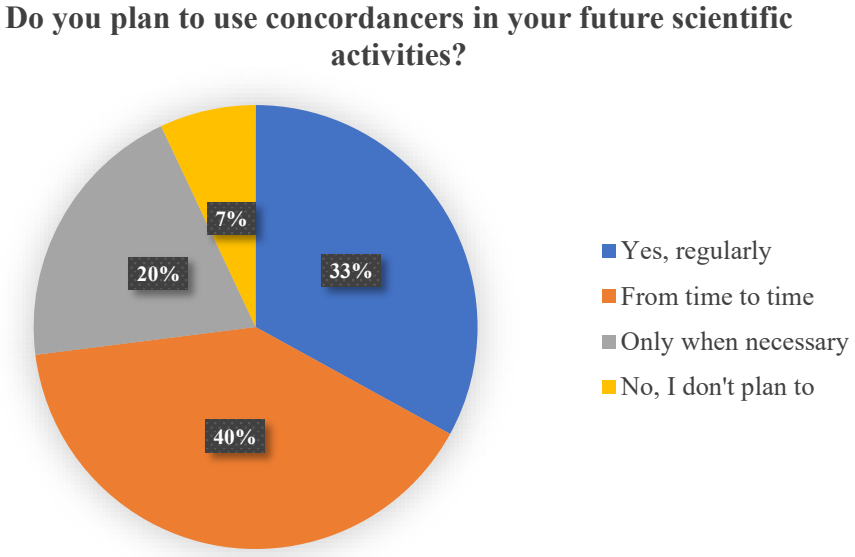

Fig. 5. PhD student's responses to Question 4

Students were also asked three open-ended questions:

- What specific features of concordancers did you find most useful?
- Were there any times when you felt frustrated while using concordancers? Why?
- How do you think the learning process could be improved using corpus analysis?

After analyzing the respondents' responses, key themes recurred across the different categories. Table 1 shows the code categorization of the data obtained.

Table 3

Code categorization of open-ended questions

Category	Number of mentions	Codes (key themes)
Useful features of concordancers		
Grammar analysis	4	*grammatical analysis, correctness checking, sentence structure*
Finding fixed expressions	4	*lexical analysis, phraseological constructions, language patterns*
Frequency analysis of terminology	5	*terminology, corpus analysis, frequency*
Stylistic appropriateness	2	*academic style, scientific discourse*
Frustration and difficulty in use		
AntConc Complexity	5	*technical complexity, interface, training needs*
Lack of practice	7	*insufficient practice, need for integration into the course, training exercises*
Limited time	3	*time shortage, intensity of training, difficulty in planning*
Suggestions for improving the learning process		
Creating step-by-step instructions	6	*methodological materials, manuals, instructions*
Involvement of programming teachers	4	*IT support, usage training, expertise*
Increased practice time	5	*additional classes, in-depth learning, more exercises*

The analysis of the main patterns showed that concordancers are effective for terminology analysis (60%), grammatical analysis and stable expressions (40%). However, postgraduate students lack experience and practice for effectively using corpus tools (47%), and for 33% of respondents, they were too complex.

According to the participants of the experiment, in order to effectively work with concordancers in teaching a foreign academic language, it is necessary to develop methodological recommendations and instructions for using AntConc (27%) and increase the time for practical work with the application (33%). These results confirm the quantitative analysis of closed questions.

The code categorization helped to reveal another important aspect: 27% of respondents suggested involving programming teachers to explain the technical features of working with corpus tools.

Conclusions. The present study explores the impact of concordances on the development of academic foreign language competence of postgraduate students of Agronomy. The results of diagnostic and summary tests in the experimental and control groups were analyzed using Student's t-test. The statistical analysis results confirmed the effectiveness of concordances compared to Academic Phrasebank, Google Scholar Tools, and AI applications (Grammarly, ChatGPT). Although both groups had a relatively similar level of academic English before the experiment, after the experiment, the participants of the experimental group showed better results ($p = 0.00003$).

Overall, the survey results indicate an upbeat assessment of using concordancers in teaching academic English. At the same time, 20% of negative reviews indicate that working with corpus tools was limited in time, as well as the lack of clear instructions on their practical application in training postgraduate students of agronomic specialities.

Our article proposes options for tasks in the AntConc application using authentic articles indexed in leading scientometric databases in agronomy.

Among the main difficulties third-level education applicants encounter is the lack of skills in working with the application. Therefore, it is advisable to:

- create video lessons with step-by-step instructions together with teachers of the Department of Computer Technologies,
- organize training and consultations,
- include topics on using corpus tools in meetings of scientific student associations.

The experimental study confirms that using concordancers in professional foreign language classes can improve foreign language academic writing and be helpful in the further scientific work of postgraduate students.

The results of the open coding method were consistent with the results of the open questionnaire, but at the same time, new accents were added to the research.

Respondents positively evaluated AntConc, noting its capabilities for analyzing terminology and stable expressions, as well as grammatical analysis and stylistic correction. In addition, postgraduate students consider it advisable to involve lecturers-programmers in working with concordancers. Further research should focus on the long-term impact of corpus tools in the independent research work of future scientists.

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ВИКОРИСТАННЯ КОРПУСНИХ МЕХАНІЗМІВ ДЛЯ ПОКРАЩЕННЯ ВОЛОДІННЯ АКАДЕМІЧНОЮ АНГЛІЙСЬКОЮ МОВОЮ СЕРЕД АСПІРАНТІВ: ВПЛИВ НА НАВЧАЛЬНИЙ ПРОЦЕС

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Анотація. Високий рівень володіння академічною англійською мовою є передумовою успішного функціонування аспірантів у науково-освітньому середовищі. Це включає точний виклад наукових ідей як в письмовій, так і в усній формах, представлення результатів досліджень на міжнародних заходах, доступ до публікацій у світових наукометричних базах та можливість публікації власних напрацювань. У сучасному освітньому контексті технології, зокрема конкордансери, відіграють важливу роль у розвитку академічної іншомовної компетентності та формуванні навичок самостійної роботи. Метою дослідження було оцінити ефективність використання конкордансерів (AntConc і Lextutor) у формуванні академічної іншомовної компетентності аспірантів спеціальності «Агрономія» та порівняти їх з альтернативними засобами – онлайн-ресурсами й застосунками на основі штучного інтелекту (Academic Phrasebank, Google Scholar Tools, Grammarly, ChatGPT). У дослідженні взяли участь 30 аспірантів першого року навчання, поділених на експериментальну та контрольну групи. Методика включала діагностичне (прі-тест) та підсумкове (пост-тест) тестування, що охоплювало теоретичні питання, аналіз фрагмента наукового тексту та написання есе у науковому стилі. Статистична обробка результатів проводилася за допомогою t-тесту Стьюдента. Крім того, студенти заповнили анкету з відкритими та закритими питаннями, результати якої аналізувалися кількісно та методом відкритого кодування. Результати дослідження засвідчили значуще покращення академічного письма в експериментальній групі, що підтверджує ефективність використання корпусних інструментів у навчанні академічної англійської мови. Більшість студентів високо оцінила можливості AntConc, зокрема аналіз термінології, граматики й стійких виразів. Водночас частина респондентів відзначила складність інтерфейсу та потребу в додаткових методичних матеріалах. Відтак доцільним є створення покрокових інструкцій, залучення викладачів комп'ютерних дисциплін до навчального процесу та збільшення кількості практичних занять.

Ключові слова: конкорданси; професійна іноземна мова; аспіранти; агрономія; граматичні структури; термінологія; усталені вирази; Grammarly, ChatGPT