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### TEACHING PHD STUDENTS TO WRITE RESEARCH ARTICLES IN ENGLISH

**Summary.** The present paper deals with the peculiarities of teaching PhD students to write a scientific research article in English at a Ukrainian technical university. A well-written research article for an international journal is considered as an indicator of effective foreign language course at PhD level and the main part of its content. The difficulties that language teachers can face during this process are considered. Special attention is paid to the main stages in teaching PhD students to write research articles. Some practical recommendations to the organisation of this process in a university environment are given.

**Keywords:** research article, foreign language training, PhD students, scientific writing skills, content.

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### НАВЧАННЯ ЗДОБУВАЧІВ ВИЩОЇ ОСВІТИ СТУПЕНЯ ДОКТОРА ФІЛОСОФІЇ НАПИСАННЯ АНГЛОМОВНИХ НАУКОВИХ СТАТЕЙ

**Анотація.** У роботі розглянуто особливості навчання здобувачів вищої освіти ступеня доктора філософії написання наукової статті англійською мовою в українському технічному університеті. Правильно написана наукова стаття для міжнародного журналу розглядається як показник ефективності курсу з іноземної мови в аспірантурі та як основа його змісту. Розглядаються труднощі, з якими можуть зіткнутися викладачі під час навчального процесу. Особлива увага приділяється основним етапам навчання аспірантів написання наукових статей. Наведено практичні рекомендації щодо організації такої роботи в університетському середовищі.

**Ключові слова:** наукова стаття, іншомовна підготовка, аспіранти, навички наукового письма, зміст.

**Problem statement.** Foreign language training of PhD students is of great importance nowadays, as modern scientists cannot do without using foreign languages, especially English, for both effective communication in a professional environment and while solving the research tasks. According to the official mandatory requirements [7], PhD students must have such foreign language communication skills that help them to present clearly and discuss the results of their research in oral and written foreign language speech, as well as to understand properly the scientific texts in their field of study.

To fulfil these tasks PhD students must know the methods of scientific communication and stylistic peculiarities of representation of their research achievements in both native and foreign (usually English as an international language of science) languages while working with Ukrainian and foreign colleagues, use the appropriate methods and techniques to analyse research papers as well as be able to follow the academic ethics in their activities [5].

In perspective of scientific communication in the academic environment, the most challenging task for Ukrainian PhD students is to write an article and publish it in a suitable international journal, which is prestigious and indexed in Scopus or Web of Science. This new requirement is quite difficult for young scholars to meet, as most manuscripts submitted to these journals must be written in English and correspond to the academic discourse accepted in the world.

In fact, English of non-native speakers often does not comply with the standards of international journals. The author can feel frustrated at editor's rejection of publication due to poor English, poor structure or readability. It is during the course of EFL (English as a foreign language) at the PhD level that the students have the opportunity to be explained, advised how to improve the manuscripts and their writing in general.

**Literature review.** Theoretical and practical aspects of the present-day foreign language training at the PhD level have become the subject of research of a number of scholars and academics, in particular G. Buyanova, A. Kinderknecht, T. Popova, O. Peunova [5], M. Laskovets [3], O. Naumova [4], and others. T. Vepreva and O. Pechenkina [1] consider the modern changes in the content of PhD exam in a foreign language. L. Pelekh [6] develops the principles of organising high quality self-study of PhD students.

The design of EFL courses and methodological principles of masters and graduate students' studies are actively studied by L. Cassuto [12], S. Kaur [15]. The methods for teaching writing at a tertiary level have been developed by O. Tarnopolskyi, S. Kozhushko [9], J. Harmer [14] and others. For inexperienced authors of scientific papers, M. Davis [13], A. Wallwork [16], M. Cargill and P. O'Connor [11] have written the books in which they provide the readers with the structure of scientific research articles published in English, process of submitting an article for publication, strategies of successful scientific writing as well as the specific English language features commonly used in each section of published articles.

**Research framework.** After implementing in 2016 the new programme of training scientists

[7], the period of time within which the Ukrainian students must complete the PhD degree is four academic years. The number of the ECTS credits required for the completion of a foreign language course involves 6-8 ECTS credits [7] or "according to the higher education standard" [8], self-study accounting for the major part of them. For example, at Igor Sikorsky Kyiv Polytechnic Institute PhD students have 72 academic hours in class and 108 hours for self-study. Taking into account the fact that the methodology and motivation of studying a foreign language in the EU countries due to objective historic reasons are more effective than in our country, there is an urgent issue to develop effective approaches to the formation of the content of the EFL course to PhD students in Ukraine as well as the methods for improving their scientific writing skills. And in accordance with the latest requirements to publish a research article in an international journal, it concerns teaching PhD students doing their degree at Ukrainian technical universities, in particular.

**The purpose** of the present study is to consider the main stages of the process of teaching PhD students to write a scientific research article in English and analyse the moments the teachers should pay attention to.

**Results and Discussion.** The course of a foreign language teaching to PhD students is communicatively and professionally oriented and is realised in the process of practical classes and their individual work (self-study). Writing a research article for publication in an international scientific journal is believed to be a result of effective process of studying a foreign language at university. This task is followed by a long process of preparatory work concerning studying authentic literature, searching and selecting electronic resources necessary for their research, analytical reading of research articles, and practising in writing their sections. For example, the PhD students of Igor Sikorsky Kyiv Polytechnic Institute use a foreign language to write an analytical literature review in their field of study, prepare the reports and participate at conferences, webinars and foreign-language projects, write abstracts, summaries, and other academic texts.

Before starting to teach PhD students to write a research article in science, one should take into account the difficulties a teacher may face, namely: different age and experience of graduate students; insufficient amount of time allocated for practical classes at university; weak skills of PhD students in performing the tasks independently; low level of linguistic and cognitive motivation [5].

Note that PhD students are adults with their own experience in learning languages, so the principles of andragogy must be followed in order to succeed in fulfilling educational tasks. The practical orientation of training and use of the previous experience of PhD students, formation and support of motivation in languages, as well as the importance of an individual approach in organizing the process of foreign language training must be emphasized. Here the blended learning technology, which involves a combination of traditional and distance courses using the Internet, can be effective and justified. At the same time, the scientists [12] note that the student-centered approach with

considering educational needs is often ignored in teaching graduate courses.

In order to gain PhD students' respect, the teacher needs to constantly prove his/her professionalism in both scientific research and teaching skills, demonstrating high qualifications and the desire to fulfil teaching tasks. Preparation for teaching PhD students is a key point, as here an individual approach should be maintained. It is necessary to think of and prepare more relevant teaching materials because revising vocabulary and grammar structures can take much less time. On the other hand, the complexity of the content can increase the duration of discussions in classes, which allows changing the activities less frequently [10].

One cannot but mention that there are difficulties in supporting linguistic cognitive motivation in PhD students. They may claim they have a high level of language skills to fulfil scientific and professional tasks and, if necessary, expect the Internet and electronic translation software to help them. The teacher must help PhD students develop clear understanding of practical significance of learning a foreign language for writing and defending the dissertation, as well as for further achievements in their life. In fact, teaching practice shows that the students even with strong foreign language communication skills may have serious gaps in the knowledge. There is always a need in vocabulary extension, terminology learning, and the features of the language used in publications.

The process of teaching writing an article in science cannot be successful without the development of reading skills in academic discourse and critical analysis of academic texts. It is very different from reading for pleasure, as academic texts usually require active engagement, which includes: a) skimming reading to analyse the document as a whole and identify its structure; b) distinguishing the main points; c) generating questions to evaluate an author's ideas; d) note taking of each section and summarizing the text; e) comparing and contrasting related reading.

In addition, PhD students should practise in writing secondary academic texts in English both to English-written texts and the texts written in mother tongue (primary sources): abstracts, summaries, reviews, problem-solution and comparison essays. Each of these genres can be a starting point for writing the own scientific text – an article.

In order to plan to write a research article, a PhD student should, first of all, choose the appropriate journal, preferably with a high impact factor, and study its requirements. Then he/she reads and analyses papers which are relevant to their topic and field of study, which helps them to: write the own literature review, because after this analysis they will be familiar with the literature; identify the differences in other researchers' approaches and results compared to own research; note down the strengths and weaknesses (including possibly bias) in the work of others [16].

While reading as many as they can from the chosen journal, PhD students have a clear picture of the editors' requirements and referees' expectations. They are becoming aware of the structure of a research article in their field of study and start thinking on what makes their own research unique. At this stage we

recommend PhD students to write down standard phrases used in English in research as well as we give them our lists for future analysis and usage.

The conventional research article structure in science is AIMRaD, i.e. Abstract, Introduction, Materials and Methods, Results and Discussion, with some variations, then go Conclusion and References sections. Here we do not consider the research in humanities, the papers of which have different structures. Besides experimental research, of particular relevance to scientists are review articles, which do not present new data, but discuss and evaluate the findings of other scientists, in order to advance thinking in the field of study [11].

As far as the order in which to write the various sections of an article is concerned, A. Wallwork [16] notes that there is no standard in it, but a typical one is as follows: 1) Abstract (very rough draft); 2) Methods; 3) Results; 4) Discussion; 5) Introduction; 6) Conclusions; 7) Abstract (final version). Readers prefer reading the Title and Abstract of a paper first, followed by the Discussion, so these sections should be considered in class even more thoroughly.

Before the PhD students begin writing, they do not always have clear ideas in their head. In this case, we organise the session of mini presentations, where students talk about their research in a group, and although the groupmates are not always experts on it, this activity is very useful and entails a lot of questions and comments from the audience. In the course of study, while we are discussing the linguistic features of graph description and practising writing the chart analysis, it is recommended to PhD students to give an oral presentation of their methods and results to the groupmates. It may help them to formulate phrases that can be used in the paper, and, at the same time, comments of the peers help to focus on highlighting the key findings.

According to the experts on writing research papers [11; 13; 16], native referees tend to be more interested in how the article flows and how easy it is to read, whereas non-native referees seem to pay attention to grammatical and vocabulary mistakes. In fact, accurate English is of great importance to have the article accepted.

A great number of Ukrainian PhD students find writing directly in English very difficult, even though they have a sufficient level of English writing skills (B2-C1), not to mention the students with low EFL performance. They prefer writing in their native language and then translate into English. Standing for direct writing in English, A. Wallwork argues that “with a model paper written by a native English speaker in front of you, which you can follow step by step, it should be quicker than translating from your own language. From an English point of view, it should also be more reliable and accurate because you will be using some standard phrases that you have lifted directly or adapted from your model English paper” [16, p. 15].

In order to improve writing skills, we practice self- and peer assessment of the academic texts/article sections in a mutual learning process. They discuss actively both the terminology in their field of study and the phrases used. In addition, an extended list of the newly published monographs, books, articles, on-line resources that provide advice for all types of papers in scientific communica-

tion is recommended for self-study. The results of this self-study is always presented either in a written form (e.g., summary) or orally.

During the EFL course for PhD students, a particular attention should be paid to the analysis of the most frequent mistakes made by non-native writers. They concern: word order in English (e.g., in active and passive voice, place of adverbs and adjectives, noun constructions), especially ambiguity in it; the use of correct tenses in certain sections of an article; link words in sentence constructions and the problem of wordiness and vagueness; structuring paragraphs, avoiding redundancy; using Latin words and the problem of selecting synonyms; making references and clarifications; highlighting the findings; hedging techniques; paraphrasing and plagiarism, etc.

For example, to increase readability, the experts advise an author to make sure that a sentence has a maximum of 30 words, not to separate the subject from its verb using more than 8–10 words, to use the minimum number of commas, avoid semicolons and parentheses, not to worry about repeating key words as it only will increase the clarity of writing [16].

PhD students discuss the tips on scientific writing given by experts, perform the tasks for training,

and respond to the teacher's comments on the draft article written by them. We do not allow the article to be poorly written and half-corrected, although the mutual communication with a PhD student on his/her research article can take significant amount of time. For the most of Ukrainian PhD students it is the first experience in writing scientific texts of such a type, so difficulties here are unavoidable, but proper work will be rewarding both for the student and his/her teacher.

#### Conclusion and prospects for future study.

Foreign language training at the PhD level involves further development of skills and competences that ensure the productive two-way communication in a scientific environment. The result of the effective foreign language course at this level can be represented by the written scientific text – a research article for an international journal. Thus, the process of teaching PhD students to write it becomes the main part of the content of the EFL course.

Further study will be devoted to the search and analysis of skill-development strategies of PhD students as individuals and groups, and effective methods for teaching them to write the sections of research articles in science.

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