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ORIGINAL

Comparative Syntax of Secondary Academic Texts Across English and Ukrainian in Scientific Domains

Sintaxis comparada de textos académicos secundarios en inglés y ucraniano en ámbitos científicos

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ABSTRACT

Introduction: effective communication in modern science depends on many factors, including the syntactic organisation of academic texts, which allows for accurately conveying the essence of information, avoiding contradictory or double reading, and formulating ideas, concepts, and strategies. This article aims to analyse the syntactic features of school academic texts.
Method: to this end, the specific features of scientific communication of this type and the specifics of scientific thinking have been investigated.
Results: the study's results will help improve the effectiveness of tools in scientific communication and deepen the methodological foundations of scientific discourse. The study analysed a large corpus of secondary scientific and academic texts (abstracts, reviews, abstracts, theses, and dissertations), describing and comparing the specifics of syntactic structures in Ukrainian and English; formulated specific recommendations and conducted a statistical analysis of the levels of comprehension of secondary scientific (academic) texts in the languages compared. It is established that secondary educational and scientific texts differ in the syntactic organisation of the text depending on the field of knowledge.
Conclusions: thus, the humanities are characterised by emotional syntax with rhetorical figures emphasising interpretation, while in technical texts, syntax is subject to strict logic and argumentation. The presence of descriptive constructions and emotional colouring characterises the syntax of scientific texts in the humanities. In contrast, technical fields are characterised by analytical sentence structure and syntax based on logical grammatical constructions.

Keywords: Academic Writing; Scientific Style; Academic Writing; Science; Scientific Writing; Secondary Education; Review; Abstract; Thesis; Abstract; Syntactic Structure.

RESUMEN

Introducción: la comunicación eficaz en la ciencia moderna depende de muchos factores, entre ellos la organización sintáctica de los textos académicos, que permite transmitir con precisión la esencia de la información, evitar lecturas contradictorias o dobles y formular ideas, conceptos y estrategias. Este artículo

pretende analizar las características sintácticas de los textos académicos escolares.
Método: para ello, se han investigado los rasgos específicos de este tipo de comunicación científica y las particularidades del pensamiento científico.
Resultados: los resultados del estudio contribuirán a mejorar la eficacia de las herramientas de comunicación científica y a profundizar en los fundamentos metodológicos del discurso científico. El estudio analizó un amplio corpus de textos científicos y académicos secundarios (resúmenes, reseñas, resúmenes, tesis y disertaciones), describiendo y comparando las especificidades de las estructuras sintácticas en ucraniano e inglés; estudió las peculiaridades de la redacción de textos científicos secundarios; formuló recomendaciones específicas y realizó un análisis estadístico de los niveles de comprensión de textos científicos (académicos) secundarios en las lenguas comparadas. Se establece que los textos educativos y científicos secundarios difieren en la organización sintáctica del texto en función del campo de conocimiento.
Conclusiones: así, las humanidades se caracterizan por una sintaxis emocional con figuras retóricas que enfatizan la interpretación, mientras que en los textos técnicos la sintaxis está sujeta a la lógica estricta y a la argumentación. La presencia de construcciones descriptivas y de colorido emocional caracteriza la sintaxis de los textos científicos de humanidades. En cambio, los textos técnicos se caracterizan por una estructura oracional analítica y una sintaxis basada en construcciones gramaticales lógicas.

Palabras clave: Redacción Académica; Estilo Científico; Redacción Académica; Ciencia; Redacción Científica; Enseñanza Secundaria; Reseña; Resumen; Tesis; Resumen; Estructura Sintáctica.

INTRODUCTION

It is difficult to overestimate the role of syntactic organisation in a scientific text since it is an effective tool for internal text organisation, structuring, and building a system of argumentation. Therefore, for effective communication in the scientific community, the syntactic organisation of academic texts allows for accurately conveying the essence of information, avoiding contradictory or double reading, formulating ideas and concepts, and presenting the results of one's research.

The academic writing style is regulated and codified by the established requirements of the scientific style of each national language. However, for most speakers, the requirements are universal and boil down to the absence of ambiguity, conciseness, and accessibility of presentation combined with the use of terms of the relevant terminology. Academic texts are distinguished by a specific list of requirements for each type of such text, which often differ significantly, and the style itself varies from the actual scientific to the educational. The universal requirements of academic writing include the production of speech in the third person and the avoidance of the I-form, the presence of linguistic clichés and terms, and the avoidance of colloquial words, constructions, and phraseology. Editors of international scientific journals use the principles of this style of writing, so mastering them is essential for conducting a scientific dialogue, discussions, or simply entering a scientific context.

Academic writing is one of the most multifaceted, complex and slowly mastered sets of competences, which include both metalinguistic (e.g., hypothesis formulation, logical organisation of ideas, method of proof) and linguistic (e.g., thesis formulation, use of syntactic structures, transition signals, relevant vocabulary). An important characteristic of a modern scientific text is its openness to the public. The language of the text should be clear and understandable to any educated reader, at least in key, metatextual elements such as the introduction, discussion, and conclusion. Vague, deliberately «academic», hard-to-read language aimed exclusively at narrow specialists is considered a manifestation of the author's academic illiteracy and disrespect for the academic community.

The article aims to analyse the syntactic features of school scientific texts, exploring the specific features of scientific communication of this type and tracing the specifics of scientific thinking. The study's results will help improve the effectiveness of tools in scientific communication and deepen the methodological foundations of scientific discourse.

The object of the study is school educational texts (social, natural, technical and humanitarian). The corpus of these academic texts forms the empirical basis of the article. To achieve this goal, the following practical tasks were outlined:

- to analyse the scientific works that have chosen the syntax of secondary scientific and academic texts as the focus of their scientific reflections;
- to study the corpus of secondary scientific and academic texts (abstracts, reviews, abstracts, theses, dissertations), describing and comparing the specifics of syntactic structures in Ukrainian and English;
- to formulate specific practical recommendations for writing or editing this type of academic text;

– to conduct a statistical analysis of the levels of comprehension of secondary scientific (academic) texts in the compared languages.

Literature review

Having conducted a critical review of the scientific literature on our topic, it is worth noting that scientists have investigated the relationship between metacognitive planning, evaluation strategies and control over the interpretation of scientific texts.[1,2] Many researchers have classified scientific-style texts and described genre characteristics.[3,4,5] Ukrainian scientist Artemenko[6] analysed the compliance of academic writing standards with international requirements, as this is important for Ukraine's integration with the world scientific community and for students entering foreign universities or participating in academic mobility programmes.

Important practical scientific achievements include the development of methods for working with bibliographic databases and improving text analysis methods.[7,8] Mebertet al.[9] outlined the features of writing a scientific essay as a dominant genre in scientific discourse, exploring the structure and organisation of the text, the logical sequence of arguments and criteria for completing the task. Researchers Adhikari and Mukherjee[10] and Piter et al.[11] focus on the relevance of the topics of scientific articles and their relevance to the topics of conferences or scientific symposia.

Studying the discursive structure of industry-specific scientific articles is essential for the academic field.[12,13] Academic texts have several specific features that distinguish them from other styles. These features, such as objectivity, absence of emotional colours, and personal judgements, are discussed in the works of Wu et al.[14] and Davydov and Lozynska.[16] Most studies focus on the analysis of the syntactic features of English as a language of international communication, the language of modern science.[17,18,19]

The syntactic level of the text should provide for the possibility of including citations, references, and a system of logically developed argumentation in its structure, facilitating a virtual dialogue with previous researchers. This unique feature of academic texts - conducting an imaginary dialogue with predecessors - has repeatedly become the centre of academic debate.[20,21,22] In addition to the systematic terminology, an academic text should be accessible and understandable; the presentation style should be scientific. To write an academic text, the author must have both linguistic competences - be able to paraphrase words and expressions, verbalise ideas using language at the level of a sentence, paragraph, and text; and metalinguistic competences - analysis, have developed critical thinking, logical thinking, and skills.[23] As can be seen from the literature review, the syntax of secondary scientific and academic writing has not been sufficiently studied and requires further detailed research.

METHOD

The methodology of the study consists of the syncretism of such theoretical and experimental methods as descriptive (for critical review of the literature, description of basic theoretical phenomena and concepts), cognitive analysis (for studying the specifics of the syntax of secondary academic texts in Ukrainian and English), corpus analysis of texts (for tracing the frequency of use of syntactic structures), comparative method (for comparing the syntactic structures of the scientific style of English and Ukrainian, cf.

RESULTS

Academic writing involves the comprehensive development of metalinguistic or linguistic competences to achieve the goal of scientific communication. Effective written communication in the academic environment requires creating texts of various genres based on the developed professional skills of writing, critical thinking, independence, and reflection. The genres of written academic discourse include essays, summaries, abstracts, annotations, information presentations, and scientific articles.

The key principle of global scientific communication defines a scientific text as a continuation of the ongoing discussion in society on socially significant issues. It carries a new idea that the author brings to the discussion of the academic community and the wider public. For this purpose, the text should be academically competent, i.e., it should convey the new idea to the addressee clearly, concisely and convincingly. Its logic and organisation are based on respect for the reader as a partner - another researcher, student or interested member of society who works with the text as a source of information in a flexible, rich, multimodal environment, selecting and critically evaluating it for his or her purposes. The requirements imposed today on a scientific text when it is published and, accordingly, on an academic text of an educational nature are similar since they are based on this principle. This principle also determines the evaluation of an academic text.

According to the laws of academic writing, the text's organisation is non-linear, focusing on the reader's quick search for information. The mechanics of the text include its language, which should be syntactically clear, concise, and easy to understand. The sentence structure in the text is closely related to the logic of reasoning. The location of secondary and primary information, known and new, matters; even the use of capital letters at the beginning of a sentence plays a role. Mechanics is inextricably linked to focus and organisation, ensuring

the text's economy, coherence and clarity. The process of developing academic writing skills is preceded by discussions of several issues, including:

- lexical, grammatical and stylistic features of an academic text (knowledge of general scientific and highly specialised terminology, unique vocabulary used for text creation, evaluation, and determining a person's attitude to the subject under consideration);
- genre types of academic written communication with special attention to annotation and abstracting;
- the main requirements for writing annotations, types, features, and academic texts are texts aimed at transferring and transforming knowledge in the scientific and educational spheres of communication (abstracts, scientific articles, annotations to articles, literature review, research grant application).

Syntactic structures ensure the text's coherence and grammatical validity, determining the possible ways of combining and arranging words and phrases in a sentence. Different genres of the scientific style have different syntactic priorities. For example, a review aims to assess a scientific work critically, so it prefers the thesis-argument structure. Abstracts, like summaries of a scientific article or conference, involve elliptical syntactic structures and one-part sentences (table 1, table 2).

Table 1. Comparative features of the syntax of secondary scientific texts in English and Ukrainian

Specificity of syntactic structure in the Ukrainian language	**Specificity of syntactic structure in English**
Word order	
Flexible word order: Subject-Object-Verb	The typical word order: Subject-Verb-Object
Use of cases	
A system of cases expresses syntactic relationships in a sentence. Words change cases depending on their role in the sentence.	Case use is less active, and the order of words and prepositions determines most of the syntactic relationships.
Use of articles	
Nouns can be identified by context or by using words such as "that," "this," or "which."	Articles (definite and indefinite) are used to identify nouns.
Verb forms	
Persons and numbers can modify verbs and have different verb and tense forms.	Although there are tense forms, verbs only change for person and number in the present tense.
Structure of the questions	
Changing the tone or adding introductory words is often used to form questions.	Questions often form by inversing the subject and verb or using auxiliary verbs.

Table 2. Peculiarities of the written form of secondary scientific texts in Ukrainian and English

Ukrainian language	**English language**
Reviews	
- flexibility of lexical composition; - syntactic diversity; - detailed description.	- straightforward and clear style; - paragraph structuring; - use of academic language.
Abstracts to scientific papers	
Adherence to the structure: - description of the study; - research methodology; - results; - conclusions.	Adherence to the structure: - a brief description; - research methods; - results and conclusions; - keywords.
Summary	
- flexibility in the use of words; - use of cases; - detailed descriptions.	- straightforward and clear style; - Paragraph structuring; - structures of academic writing.
Abstracts of the conference	
- word synonymy; - flexibility of grammatical structures.	- straightforward and concise style; - structures of academic writing.

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The language in which reviews are written may affect their structure. Reviews written in Ukrainian use a diverse system of words and phrases. In contrast, reviews written in English use a direct style, leading to concise and accurate expressions. The structure of Ukrainian abstracts includes a complete description of the research topic. The English abstracts briefly describe the research topic, objectives, and relevance.

There are also some differences in the structure of a CV in Ukrainian and English. Ukrainian resumes are characterised by more detailed descriptions, which leads to a more complex structure of a Ukrainian resume. There is a difference in the structure of conference abstracts in English and Ukrainian. Both language features and the accepted scientific style can cause differences.

The comparative analysis of 40 secondary academic texts of four different genres characterises the level of acceptability of secondary academic texts in English and Ukrainian and recommends their publication in academic journals (periodicals and special issues) and conference proceedings.

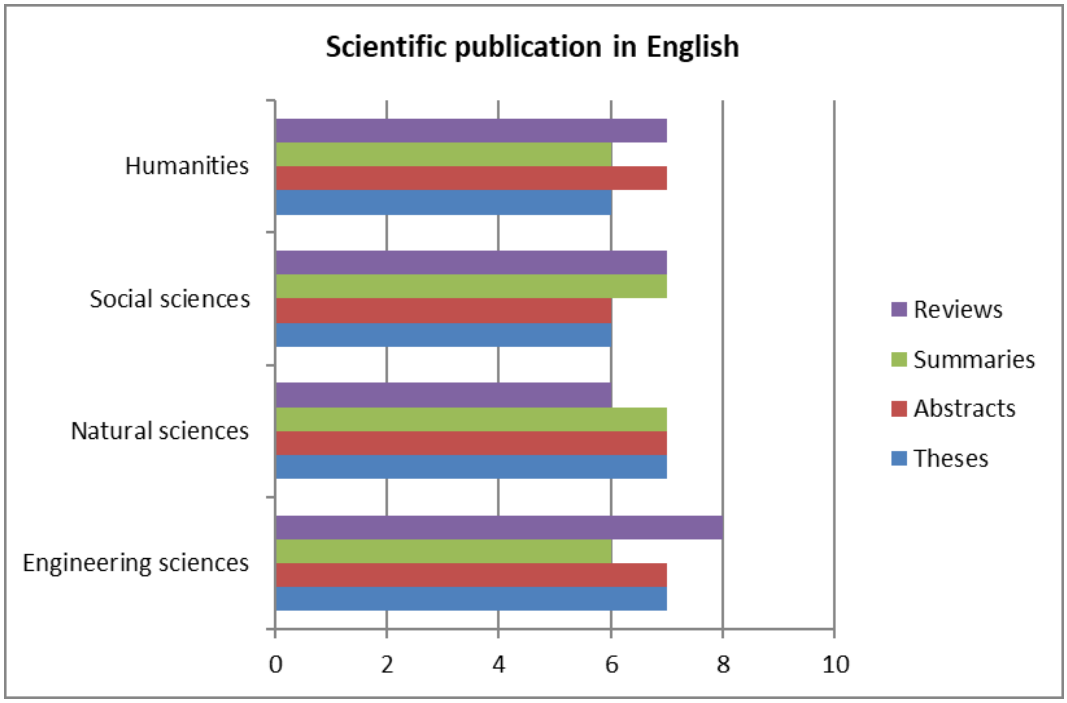

Figure 1. Comparison of statistics of approval for publication of secondary scientific texts in Ukrainian and English

There are 7 points for Ukrainian-language theses in the humanities and 6 for English-language theses. The CV and abstract have the same index. English-language reviews have a lower index than Ukrainian-language humanities reviews. The peculiarities of academic and scientific texts explain the indicators. The structure of humanitarian texts can be more diverse, emphasising style and emotional colouring. Linguistic means can be used to convey analytical and interpretive information.

Texts with quotations and reflections affect the structure of the text. There are indicators for secondary research texts in the social sciences. There are 8 points for Ukrainian, 6 for English and 6 for abstracts. The structure of the text can be analysed in the social sciences. It focuses on the description and analysis of data. Medium-length sentences can combine both explanatory and argumentative elements. They can use technical terms and statistics.

Natural sciences in English and Ukrainian languages received 7 points each, while summaries in English and Ukrainian received 8 and 7 points, respectively. Reviews in Ukrainian got 8 points, and 6 points in English. Science texts focus on accuracy and clarity of presentation. This may include extended and complex sentences. In secondary scientific texts, it is possible to find the following indicators: the logical sequence of thoughts and mathematical accuracy is what the technical sciences focus on. Simple sentences can express mathematical concepts. They may contain terms unique to the field of science. We offer the following practical recommendations for producing or editing secondary academic texts:

1. Simple sentences are crucial.
2. Paragraphs and sentences are logically connected.
3. Text is more dynamic and engaging when sentences are different. Long sentences can provide more detail, while short sentences can emphasise key ideas.
4. It should alternate different syntactic structures and sentence types to make the text more interesting and dynamic for the recipient.

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DISCUSSION

We agree with Nivala et al.[24] that creating an academic text to teach academic writing can be divided into three stages: planning, implementation, and control. The first stage is devoted to the planning of academic discourse, where the purpose of the text, the target audience, semantic realisation, and content structuring are determined. The second stage involves implementing and formulating the statement per the plan formed in the previous stage. At this stage, it is important to determine the typical syntactic structures. Repeated reading and editing of the text is important, as it allows it to finally acquire completeness, accuracy, logic, objectivity and linguistic correctness. It should be noted that at each stage, specific skills and abilities are updated.[25] Creating a written text is not linear but involves repeatedly returning to the text with changes and editing.

When creating a secondary academic text, it is important to predict the target audience, which may make the text more informative or technical. Texts of this type can be designed for both beginners and general audiences.[26] For the humanities, syntax can be emotional, filled with various rhetorical figures that function precisely at the level of the syntactic organisation of the text.[27] Violation of syntactic norms can lead to the creation of communication barriers and distortion of trustworthy intentions and judgements in scientific communication.

When analysing a secondary academic (educational) text, we propose to distinguish the following lexical and grammatical features of a foreign language typical for academic written communication:

- abstractness and generality lead to complex syntactic structures, such as conjunctive or non-conjunctive complex sentences;
- use of one-part impersonal and indefinite sentences;
- consistency and logic are emphasised (use of connecting sentences, cause-and-effect conjunctions, introductory words and phrases, text rubrication);
- use of bibliographic references, citations, and hyperlinks in the text;
- synonymy of syntactic constructions for the dynamism of the scientific style;
- clarity and visualisation of the text (use of signs, formulas and visual aids (charts, graphs, diagrams, drawings, tables).

CONCLUSION

Academic literacy is a reasonable basis for assessing the quality of academic and scientific texts. It allows for building assessment systems that help students develop as researchers, learn to formulate hypotheses and justify and convincingly prove their position using both metalinguistic and linguistic means. The syntax of academic texts should meet the following requirements: constructed (easily perceived) sentences with main blocks; absence of mergers, chains, and fragments; and logical and syntactic coherence.

Secondary educational and scientific texts differ in the syntactic organisation of the text depending on the field of knowledge. For example, humanities texts are characterised by emotional syntax with rhetorical figures and an emphasis on interpretation, while technical texts are based on strict logic and argumentation. The presence of descriptive constructions and emotional colouring characterises the syntax of scientific texts in the humanities. In contrast, technical fields are characterised by analytical sentence structure and syntax based on logical grammatical constructions. The structure of Ukrainian abstracts includes a complete description of the research topic. English abstracts briefly describe the research topic, objectives, and relevance.

There are also some differences between the structure of a CV in Ukrainian and English. Ukrainian resumes are characterised by more detailed descriptions, which leads to a more complex structure of a Ukrainian resume. In English, resumes have a three-part structure (introduction, body and conclusion), resembling a short version of a scientific essay.

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