



Innovations in scientific communication: Techniques for crafting distinctive textual content

Liudmyla Kotkova^a   | Oksana Prykhodko^b  | Svitlana Lytvynska^b  | Hanna Tsyhanok^c  |
Yuliia Lushchuk^c 

^aDepartment of Philological Disciplines and Methods of Their Teaching, Chernihiv Regional Institute of Postgraduate Pedagogical Education named after K. D. Ushinsky, Chernihiv, Ukraine.

^bDepartment of Ukrainian Language and Culture, National Aviation University, Kyiv, Ukraine.

^cDepartment of Foreign Languages, Sumy National Agrarian University, Sumy, Ukraine.

Abstract The rapid globalization and integration of science-based information technologies have led to continuous transformation, significantly impacting socio-cultural processes. The presented concept of information space development focuses primarily on communication processes. This article aims to analyse the possibilities of technology in creating unique scientific communication within the modern information space. During the research, general methods such as generalization, comparison, systematization, abstraction, analysis, synthesis, and specification were employed. The study revealed the current stage of information society development and outlined trends in modern scientific communication models. The structure of scientific communication in the information space, which combines professional and personal components, is substantiated. The text focuses on identifying the characteristics and functionality of electronic publications within innovative technologies. It considers specific aspects of new and transformed existing variations of scientific communication in the context of digital optimization processes. The issue of the life cycle of electronic resources is also investigated. The article identifies vectors for improving scientific communication processes, focusing on quality information, digital and intercultural components of the communication process. It establishes that the optimization of scientific communication in the information space is necessary due to the specific requirements of forming a unique text based on the principles of honesty and originality.

Keywords: scientific text, scientific communication, academic integrity, text uniqueness, technology of creating scientific text

1. Introduction

The aim of scientific development is to acquire new, accurate scientific knowledge. Effective implementation of this process requires scientific communication, which is a fundamental prerequisite. The development of digitization-based information and communication technologies has created innovative and practically unlimited opportunities for supporting communication and global informatization of original text creation.

Recently, there has been significant focus in the national education sector on the role of scientific communication as a leading factor in socio-cultural and societal development. The concept of scientific communication in the information space is a comprehensive integrative characteristic. It represents a system of knowledge and personal qualities of a scientist. This forms communication goals and the ability to implement professional-social functions towards effective scientific activity.

Modern researchers (Petrushka, 2021; Yaroshenko, 2015) investigate the transformation of communication processes in the scientific community in relation to the global trend of integrated digitalization. Several scholars (Lobachova, 2023; Koshetar et al., 2022) have discussed the implementation of innovative digital tools in traditional scientific environments. The goal is to develop effective communication skills and meet the requirements of digitalization in socio-economic processes.

According to O. Tverytnykova and H. Salata (2023), the digitalization of social development requires special attention to be given to the study of mechanisms for forming scientific communication through the development of adaptation strategies in the context of digitization.

It is worth noting that today, there has been insufficient attention paid to the transformation of scientific communication in the context of digital optimization. Most members of the contemporary scientific community prioritize the use of technology in communication processes. This contributes to the development of new approaches in creating unique texts (Horovyi, 2021). Today, scientists must be prepared to communicate effectively both within the national scientific community and in the global interdisciplinary hub of integration.



The article aims to investigate the potential of technology in creating unique text for effective scientific communication in the information space.

2. Literature review

The problematic of scientific communication as a contemporary form of interaction between scientists in their professional activities is positioned as one of the key issues in interdisciplinary studies related to the philosophy of science. From different scientific perspectives, the problem and its specific aspects have been reflected in numerous research studies.

In particular, contemporary works highlight certain structural elements and functionality of the phenomenon of scientific communication (Skyba et al., 2020), analyse the process of development of professional qualities through communicative interaction (Radchenko et al., 2022), study specific types of scientific communication (Kuzminska, 2021), and explore the culture of professional communication and communicative competence in academic circles in the context of digitalization of the communication space (Kasiianenko, 2023).

At the same time, some researchers have generalized the problem of optimization of communication processes in the scientific community in the period of digital transformation of society (Kovalska, 2021). In addition, some recent works position the paradigm of interdisciplinary integration functionality through digitization of basic processes as a priority for the development of scientific communication (Yaremenko, 2021; Moullin et al., 2020).

The conceptual horizons of the researched problem are broadened in the works of scientists (Shrivastava et al., 2020; Luo et al., 2022), who pay particular attention to the development of an information model of scientific communication in terms of integration processes and digitization.

Thus, the majority of contemporary researchers see significant potential in informatization for improving the processes of scientific communication and creating unique texts. However, the question of analysing the possibilities of improving the algorithm for creating a unique test using innovative technologies of scientific communication remains largely outside the focus of scientific research by modern scientists, which emphasizes the need for a detailed study of the subject of this research.

3. Methods

The research process used a range of interdisciplinary research methods, including analysis, synthesis, abstraction, induction and deduction, and comparison. Analysis and synthesis methods were applied in the research process to identify the main factors that shape the set of structural components of scientific communication. The inductive method was used in the research process to formulate predictive directions for the development of the investigated process. The deductive method was employed to identify directions for the optimization of the communication environment in terms of informatization.

Abstraction was used in the research process with the aim of extracting theoretical generalizations, identifying key categories and concepts, and drawing conclusions about the priority vectors of development in scientific communication. Comparison was conducted during the work to identify specific features of the contemporary innovative paradigm of scientific communication space with the involvement of informatized technologies, in comparison with traditional approaches to the process of scientific communication.

The research was based on the principles of complexity and systematicity in scientific studies. Such an approach made it possible to analyse the research object as a holistic system with a multitude of connections and interdependencies.

4. Results

In the phase of global dynamics of social processes, there is an obvious awareness of the dependence of scientific communication processes on the level of development of information and communication technologies and digitization of the communication environment. At present, there is a recognized need for powerful information resources to ensure unlimited access to a globalized scientific information hub through scientific literature and journals, bibliographic databases and other tools of the digitized communication environment.

The rapid development of modern information technologies creates unique opportunities for the creation, exchange and dissemination of scientific information, sometimes changing the nature of the scientific communication process itself. A significant source in the system of scientific communication is the phenomenon of electronic scientific publishing, which serves as a primary source for the publication of research results, scientific ideas and theories, as well as their critical review. Electronic publications provide a high level of timeliness and completeness for scientific information needs.

4.1. The composition of a scientific text

Today's new technologies offer alternative models of scientific communication, among which the concept of open access is currently the most popular, as well as the transformation from a journal-oriented model of scientific information dissemination to a pay-per-article model. For Ukrainian scientists, who are faced with problems of access to publications in foreign scientific journals, the open access and open archive model is particularly attractive, as it provides access to high-quality scientific literature in the information space.

The composition of a scientific text is an approach to its structuring, correlation, and arrangement of parts for the most successful implementation of the author's idea. A thorough analysis of the compositional features of a scientific text is considered important, regardless of its volume.

The composition of scientific texts is determined. A clear structure and logical sequence allow the reader to understand the author's intention and improve the overall perception of the work. The structure of a scientific text usually includes an introduction, main body, conclusion, and IMRaD (methods, results, discussion).

The introduction reveals the state of the investigated problem, defines the goal and task, substantiates the relevance of the chosen topic, and indicates the object, subject, and research methods. In the introduction, it is worth paying attention to the level of development of the topic in domestic and foreign literature, to highlight debatable issues and unsolved problems. It is advisable to write the introduction after the main part of the work has been written.

The main part contains the research methodology and describes the main stages of the conducted theoretical and empirical research. According to the content, the main part is divided into chapters and subsections. All sections must be logically connected. Each section or subsection should have the following scheme: a short introduction, facts, and their description, conducting research based on the selected scientific methodological apparatus, and summing up the results.

The conclusions provide the results of the research, which explain the solution to the problem, and offer development prospects for further research. Conclusions are presented in the form of individual laconic provisions, and methodical recommendations and must correspond to the assigned tasks. In the conclusions, it is necessary to note not only the positive things that were discovered as a result of studying the topic but also the shortcomings and problems.

Adherence to the compositional structure of a scientific text is a mandatory requirement for its successful publication in scientific periodicals, specialized publications, and accessibility for academic circles and the public.

The model of open institutional repositories allows effective use of digital content, fast access to educational literature and electronic journals. The wide and measurable access of users, the simplicity of search systems, ensure a high level of integration of scientific processes, minimize the negative phenomenon of scientific isolation and create new opportunities for scientific collaboration.

Among the advantages of electronic journals as a digitized form of scientific communication, it is necessary to mention the speed of preparation and dissemination of publications, unlimited access in time and space, expansive range of search possibilities, creation of interactive communication links with the author team, and comfortable navigation. Moreover, modern digitized systems of scientific communication allow the creation of a system of personalized settings (Chernenko et al., 2021).

The issue of creating unique texts is closely related to the system of combating plagiarism and other violations of the principles of academic integrity. The implementation of the principles of academic integrity in the system of scientific communication should include effective regulatory tools for the participants in the communication process. In this context, compliance with the principles of academic integrity by the authors of scientific content is identified by their awareness of the norms of publication ethics and the sanctions in case of their violation.

Currently, there is a perceived imbalance in the academic community's awareness of research integrity and publication ethics. Therefore, it is considered appropriate to activate collaborative communication within the academic community to improve the overall level of information literacy and publication ethics. Sufficient awareness of various types of unethical practices serves as a basis for instilling the principles of academic integrity in contemporary academic circles and for ensuring a high level of research quality.

In the global scientific community, the ethical principles that define academic integrity are based on the positioning of aspects of trust in the scientific environment, which is considered to be a necessary condition for the effective development of the scientific community and communication processes, both externally and internally. Scientists should have no doubts about the reliability of the research results of other participants in the scientific community.

Unfortunately, violations of ethical norms have been observed in the scientific field, challenging the authority of science and reducing the level of trust in society in the achievements of modern scientists. To prevent a further intensification of these processes, it is considered necessary for participants in scientific communication to personally recognize the priority of adhering to the principles of academic integrity.

Editorial policies and the quality of their implementation offer considerable potential for promoting the principles of academic integrity. One of the main reasons why authors of scientific content violate academic integrity principles is their low level of awareness of publication ethics, which highlights the need to analyse the information space of scientific communities to disseminate cognitive content aimed at increasing information literacy in the field of academic integrity and preventing unethical practices.

Scientific journals serve as an effective communication channel, ensuring the accumulation and dissemination of new scientific knowledge. Academic libraries, in turn, provide information support for scientific activities and are endowed with the functionality of high quality educational activities aimed at ensuring a high level of information literacy among authors of scientific content and editorial boards of scientific periodicals in terms of scientific writing, publication ethics and scientific integrity.

4.2. Filling with terminological vocabulary

In the structural-functional space of scientific communication, the convergence of efforts between authors of scientific content, scientific journals and academic libraries plays a priority role. Authors of scientific content are positioned as producers of new scientific knowledge who, by citing primary sources of information, attest to the fact of scientific communication.

The global challenges of contemporary world social processes are changing the processes of information interaction within the scientific community. The required remote format of activities requires the incorporation of innovative and effective communication channels. In this context, various social media resources have significant potential as tools to meet the information needs of consumers of scientific information. Scientific communication is considered one of the fundamental determinants of the process of scientific knowledge.

During scientific communication, specific social relations are established and the stratification of the scientific community takes place. During scientific communication, a dialectical convergence of scientific information of different periodicity of creation is formed, and a dynamic of knowledge flows from the personal dimension to the social environment occurs through a series of interaction variations. Moreover, scientific communication in the modern information space acquires innovative features, which are explained by the new quality of interaction between the subjects of the rapidly and dynamically developing scientific communication environment. Innovative communication possibilities in the scientific field have a significant socio-cultural potential within global information networks (Elbrekht et al., 2022).

The most universal typical lexical feature of a scientific text is its abundance of terms, terminological phrases, and professionalism. The presence of specific lexical constructions, abbreviations, and abbreviations is also characteristic. Scientific terms, as language signs representing the concept of a special, professional field of science or technology, constitute an important component of a scientific text, accompanied by the problem of definition.

The term, as a definition of a word or phrase, assumes its special meaning, which expresses and forms a professional concept and is used in the process of assimilation of scientific objects and correlations between them. The phenomenon of the term requires unambiguity. Ambiguity is identified when the terms of a certain field are compared with the terms of related fields of science. In addition, the term should not have synonyms and show a sign of systematicity, reflecting the necessary and sufficient features of the concepts that create, the generalization of concepts and their specificity.

A scientist, in the process of working on a scientific text, should ignore the stylistic neutrality of the terminology. However, the lack of emotional and expressive coloring stems from the ability of the definition of the term to convey a certain scientific concept, and not the attitude towards it. The peculiarities of the terms are concentrated in their characteristic formation in the process of scientific activity, as a result of which they function only among specialists who have the relevant realities.

4.3. Academic integrity

It is worth noting the dualistic tendency regarding the use of artificial intelligence (AI) capabilities to create unique texts. Generating unique content using AI tools can be challenging; however, opportunities for its application are actively being developed today. Given the risks associated with the trend outlined in the context of global digitization, the scientific community excludes the use of artificial intelligence capabilities in the process of creating unique texts. Such a position is seen as the basis for the conceptual direction of the development of scientific communication towards the preservation of the individualization of scientific achievements, creativity and uniqueness. Conversely, the opposing trend of the digitized scientific community positions the use of databases, statistics or other information sources using artificial intelligence tools as a complementary functionality for scientific developments (Shkyra et al., 2022).

An important aspect that needs to be defined in the context of the use of AI is the question of authorship of academic texts. In cases where researchers present AI-generated text as their own authorship, there is a violation of the principles of academic integrity.

Renowned scientific publishers have reacted promptly to the popularization of the use of AI in the production of scientific publications by issuing an official statement prohibiting the attribution of tools such as ChatGPT or Large Language Models as the author of an article, and demanding transparency and specificity regarding the list of tools and the way they are used in the production of scientific text. Some scientific journals, such as Science, have extended these general requirements by prohibiting the use of text generated by ChatGPT or similar AI programs in scientific articles. This policy is also followed by the organizers of the 40th International Conference on Machine Learning.

Thus, while not denying the positive functionality of AI language models and acknowledging the risks of manipulation involved in the process of creating unique texts, researchers should use generated scientific information responsibly. The application of AI capabilities stimulates the potential for new research directions, promotes the analysis of individual aspects from different perspectives, and is therefore positioned as an effective additional tool in the process of searching and selecting scientific information. At the same time, AI text generation tools may produce wholly or partially incorrect material, which distorts the effectiveness of scientific research (Byrkovych et al., 2023).

Therefore, in today's conditions, further detailed multidimensional research into the impact of the use of AI tools on the process of scientific communication and ensuring a positive image of the scientific field is considered appropriate. Current possibilities of scientific work in online mode, digital optimization of information accumulation processes, creation of large electronic databases, creation of targeted personal pages of scientific orientation in social networks, and active use of search engine functionality are actively incorporated into the spectrum of relevant scientific communication tools.

There is currently an active process of fundamental transformation of the information-communication space, in which the scientific community actively uses the capabilities of electronic resources in addition to library collections of printed publications. The analysis of the structural-functional characteristics of the scientific communication process confirms that the active and targeted use of modern digital optimization technologies creates all the necessary conditions for a radical transformation of the processes of scientific activity.

Among the advantages of electronic communication in the scientific field, aspects such as globalization and virtuality of communication processes, interactivity and accessibility, as well as the functionality of operational-analytical information processes without spatial and temporal restrictions, stand out. In addition, aspects of the implementation of the scientific communication process based on equal status are important functionalities.

Modern possibilities of digitalization provide mobility of scientific communication, which contributes to increased efficiency in the implementation of scientific activities. However, the process of digital optimization of scientific communication is accompanied by a number of challenges and risks. For example, in the scientific environment, the traditional formation of experts, which has been operating in the field of scientific communication since the 19th century, is practically being dismantled and serves as a kind of filter for scientific information. Moreover, the content of many electronic journals does not go through the stage of expert review, which indicates a low level of quality of the presented scientific material against the background of its quantitative growth (Krupelnyska et al., 2021).

An optimal approach to the problems outlined above is seen in the requirement for the scientific community to improve its ability to select qualitative and substantive information. In addition, the moral component of authorial responsibility is considered relevant, limiting the subjectivity of the process of filling the scientific information space with the concept of unique quality scientific texts.

4.4. Discussions

Recently, the issue of the global transformation of the system of scientific communication, especially regarding the creation of unique scientific texts, has become particularly relevant. Numerous studies of contemporary researchers have been devoted to the identification of unethical practices (Prokopova et al., 2023) and ways to counteract the spread of unreliable scientific knowledge (Zinchenko, 2023; Shevtsova-Vodka, 2023; Hurbanov, 2021).

A number of modern scholars (Canfield et al., 2020) are convinced that to achieve efficiency in exploring the potential of digital optimization of scientific communication during the global digital transformation of society, it is necessary to consider the results of researchers on the key functions of the phenomenon of scientific communication. Scientists note that the multifactorial process of formation of the scientific communication environment leads to discrepancies in approaches to defining its functional principles.

In particular, one of the leading approaches to the optimization of scientific communication processes in the information environment can be identified as the concept of identifying it as a systemic phenomenon that combines professionally significant personal qualities that stimulate the proper implementation of scientific functionality (West et al., 2021).

Some scholars see scientific communication as a hub of personal-professional characteristics in a creative context, the basic components of which are professional-content, professional-activity and professional-personal functionalities (Hayes, 2020). On the other hand, representatives of other scientific directions see innovative and creative potential in the structure of scientific communication (Mantovani, 2021). Some representatives of the contemporary scientific community (Bucchi & Trench, 2021) identify among the basic prerequisites for the formation and effective development of scientific communication those that actualize the subjectivity of scientific activity and reflect the possibilities of interaction in the scientific environment. According to the researchers, these competences are characterized by motivational-meaningful relationships, as well as personal experience and the concept of the uniqueness of scientific positioning in the communication community (Mede & Schäfer, 2020; Dutchak et al., 2020).

Among contemporary approaches to creating unique texts in terms of maximizing the potential of scientific communication, the approach of converging natural and artificial intelligence capabilities (Xu et al., 2021) integrated into a single synthesized text formation stands out. At the same time, other scientists (Guzman et al., 2020; Bessarab et al., 2022) emphasize the risks associated with the use of artificial intelligence tools in the process of creating scientific texts, drawing attention to the risks of diminishing the personal achievements of researchers as a result of interpreting the results of their scientific research.

The results of the research and the conducted analysis of scientific approaches convincingly indicate that the development of scientific communication in the information environment should be positioned as a formative factor of the scientific future on a global scale. The proposed approach to optimizing the creation of high-level unique scientific texts, based

on the use of the capabilities of innovative technologies and the implementation of strict measures to limit and control the use of artificial intelligence, ensures the harmonious progressive development of the scientific communication environment, preserving the basic image of scientific creation.

5. Conclusions

The research identified the peculiarities of scientific communication in the digital transformation of social processes. It was concluded that the integration of communication, intercultural and information-digital competences, considering the trend of integration processes in the scientific space towards the European community, is positioned as a priority direction for the development of scientific communication interaction aimed at improving the creation of unique texts. The proposed concept reflects the basic principles of modern innovative technologies that ensure the uniqueness and originality of scientific texts, including through digital tools.

The study established that scientific communication in the information field is now prioritized as a key characteristic of a researcher's activity and its main integrative quality, resulting from the synthesis of professional competences and personally significant qualities. The results of the research made it possible to develop a basic algorithm for an innovative approach to ensuring a high level of uniqueness of scientific texts in the context of the availability of digitization and artificial intelligence capabilities.

The research demonstrated that the future development of scientific communication lies in the implementation of a strategy for the optimal implementation of innovative solutions based on traditional scientific concepts.

A promising direction for future research on the outlined topic, considering the trend of globalization and integration processes in the field of scientific communication, lies in the expanded and detailed exploration of the possibilities of converging digitalized optimization of the process of creating unique scientific texts with a foundation of academic integrity.

Ethical considerations

Not applicable.

Conflict of Interest

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