

THE ROLE OF DIGITAL TECHNOLOGIES IN LINGUISTIC RESEARCHES

Matanat Alaga Gojayeva

*Doctor of Philosophy in Philology, Associate Professor
Azerbaijan, Baku Azerbaijan University of Languages,
Faculty of English-French Languages
Department of English Grammar*

Abstract. *It is impossible to imagine modern development without the widespread application of innovative technologies. Modern scientific innovations are being applied to all areas of human activity, including linguistics, and staying out of this global integration, not using the advantages and opportunities provided by artificial intelligence and innovative digital technologies, and not expanding their application creates a danger of becoming an outsider on this path. This leads to an undesirable situation of lagging behind global integration in the use of digital technologies. The above mentioned also applies to modern linguistic researches. Thus, currently, corpus linguistics, computer and mathematical linguistics, as the most modern areas of applied linguistics, are studying linguistic issues with greater precision and accuracy. The use of digital technologies at the level of modern requirements opens up wide opportunities for their use in linguistic researches, ensuring quick accessibility of the necessary materials. Currently, all areas of linguistic science - language theory, cognitive linguistics, pragmatics, machine translation, the development of speech recognition and synthesis models, algorithms - are increasing the influence of digital technologies in linguistic science. The integration of artificial intelligence into all areas of science in a short period of time requires the further expansion of the connections of this field for solving linguistic problems. The presented article examines the issue of increasing the efficiency and quality of linguistic researches against the background of the application of modern digital technologies.*

Keywords: *innovation, artificial intelligence, digital technologies, linguistic researches, accessibility*

Human thinking has reached its current level by demonstrating a dynamic, irreversible and unrepeatable development from simple to complex throughout the ages. In particular, the achievements in the field of innovative technologies from the end of the 20th century to the present have not existed before. Our modern era is a period in which innovative technologies are constantly developing and improving. People have achieved such a civilization by starting from primitive innovations, discoveries, and inventions with their labor activities and only advancing along the ages. This proves once again that there is no end to human creative thinking and that human intellectual thinking is still capable of making many discoveries. Because the scientific, innovative, digital technologies that people have achieved today are capable of renewing the entire world and they will be continually improved in the future.

The word *innovation* comes from the word *innovato*, which means *improvement, renewal*. This economic term was first used in 1912 by the American economist J.A. Schumpeter in his work “*Theory of Economic Development*”. A century ago, J.A. Schumpeter firmly stated that the basis of all development is the development of

innovative ideas and their effective application in the economy. Without innovative, scientific ideas and their conscious promotion, it is impossible to talk about any sustainable, strong economic development. He noted that every innovation must be based on “*destructive creativity*”. That is, the old must either be improved or replaced with a newer and more progressive one.

Today, without the application of innovative ideas, it is impossible to talk about innovation and development in any field of activity. The high-level application of digital technologies requires a high level of mastery and application of their use. Because today there is no sphere where it is possible to achieve any success without applying the latest achievements of science. “*Increasing use of digital technology, for instance, has been changing communication channels by initiating and expanding global networking and exchange opportunities, and affording greater worldwide accessibility to information. To successfully exploit the potential of this digitally changing world, digital literacy skills are required*” [Maahs, DeCapua, Triulzi. 2025, p.1]. The application of the latest digital technologies to linguistics brings a new essence to linguistic research, forms a new view of solving linguistic problems. We can obtain the necessary language material through digital technologies, and study it by conducting synthesis and analysis processes. In general, it is difficult to talk about the possibility of achieving development in modern society without the achievements of the 4th industrial revolution, remaining an outsider in their application. The components of the Industry 4.0 revolution include digital technologies, 3D operations, blockchain, cloud computing, the Internet of Things, robototechnology etc. Experience shows that conducting scientific research is initially carried out on the basis of selecting theoretical and practical sources on the selected topic, collecting materials. Modern technologies ensure the speed, efficiency and accessibility of these processes. Artificial intelligence is involved as a main auxiliary tool in selecting the necessary information, literature samples and identifying Internet sources related to the selected topic. “*Artificial intelligence (AI) is the science and technology of creating intelligent systems, intelligent machines, especially intelligent computer programs, that can perform the creative functions that humans traditionally perform*” [Mahmudov M. 2024, p.16]. Undoubtedly, it is the human brain that stands at the center of new scientific achievements, develops them scientifically and theoretically, and programs them with various algorithms. Modern digital technologies developed by specialists modernize the educational process, organize them in online, hybrid forms, and create the conditions for organizing the accessibility of any information by applying new innovative technologies to the learning process. For example, during the COVID-19 pandemic, we have witnessed the role of modern innovative technologies and teaching methods in organizing the learning process online. “*Digital technologies have changed the methodology of teaching in language teaching. Mobile applications, online educational platforms, video lessons and game-based learning offer language learners more flexible and fun experiences. These technologies encourage students to learn independently and allow teachers to take a personalized approach*” [Abishova Kh. 2025, p.34]. The opportunities provided to us by digital technologies and artificial intelligence have not only contributed to the learning processes, the improvement of foreign language teaching methodologies, their adaptation to world standards and requirements, but also raised the conduct of linguistic research to a qualitatively new level. Thus, modern technologies facilitate access to

Internet resources and ensure the availability of sources and materials on a selected topic in any language.

It is an undisputed fact that the role of English as a foreign language in the modern world is increasing day by day. Today, other languages cannot be compared with English in terms of its importance and functional role in society. Every passing day, especially innovative, digital technologies, the Internet, making any communication quickly accessible, and the need to communicate globally between people with different languages, have turned English into a common language (*lingua franca*) on a global level. Why English and not another language? Of course, the internal characteristics of the language, the fact that it has a vocabulary similar to many languages of the world, and its simple grammatical system play an important role here. D. Crystal evaluates the growing influence of English as a global language as follows: “*The need for a global language is particularly appreciated by the international academic and business communities, and it is here that the adoption of a single lingua franca is most in evidence, both in lecture-rooms and board-rooms, as well as in thousands of individual contacts being made daily all over the globe*” [Crystal D. 2003, p.13]. However, it is important to note that the mother tongue plays an important role as a key language in the study, teaching, and scientific research of any foreign language, as well as in the conduct of creative activities in the field of linguistics. Because on the basis of literacy in the mother tongue, we are able to master foreign languages. Knowing a foreign language, especially in language studies, is a window, a way to the outside world.

Even when comparing modern research in all fields of science with research conducted even ten years ago, it is possible to see a rich difference in information. The theoretical and practical sources on which current research is based and applied are richer and more diverse. At the same time, it can give better results when the research topic selected for research is conducted in several languages. Because the diversity of languages allows us to collect material in different languages, to get acquainted with the different judgments of different scientists of the world on the topic under study and to discuss them. Conducting research in this way increases its scientific potential and importance, and creates conditions for studying the topic on the basis of comprehensive and interesting concepts. It should be noted in particular that the existence of various linguistic portals and electronic libraries, their accessibility through new technologies, only ensures the qualitative efficiency of the research to be conducted, and in the future, creates conditions for their transformation into a new electronic information source. Currently, websites such as IPL2 Language and Linguistic Topic Page, Glossary of Linguistic Terms, The International Phonetic Alphabet, IPA Keyboard, The Speech Accent Archive, the World Atlas of Language Structures Online, National Museum of Language [6] are used in linguistic research. More detailed and complete scientific information on linguistic research can be obtained from the following electronic sources: Anthropological Index Online, Corpus of Contemporary American English (COCA), International Corpus of English (ICE), Linguist List [7]. The mentioned sources create conditions for the consistent and efficient conduct and completion of linguistic researches at the level of modern requirements, and create conditions for writing in a rich form in terms of scientific and theoretical information. Because various electronic books, articles and theses have been collected on the mentioned websites. In particular, the role of corpus linguistics in modern linguistic researches should be specially emphasized. The modern Internet, as a huge social network, provides all

information quickly and at a high level. These are the opportunities provided by artificial intelligence and digital technologies. In this regard, corpus texts, where various information about language is collected, add a special color to the research in linguistic research. “*Corpus linguistics is an approach to the study of language that involves collecting large quantities of naturally occurring language and using specialized software that manipulates that language to obtain information about frequencies, co-occurrences and meanings*” [Hunston S. 2022, p.1]. Corpus linguistics allows you to obtain any linguistic information comprehensively, because it has collected extensive texts related to various fields of linguistic science.

In conclusion, we would like to note that modern scientific and technological progress, the dynamic development of digital technologies, and the widespread penetration of artificial intelligence into scientific fields have been invented as a result of human scientific and theoretical activity, becoming the most modern technological tools that serve to improve the efficiency and quality of research work not only in linguistics, but also in all fields of science. All scientific achievements and their application to all areas of human activity aim to meet the demands of a developing society, to be a means of new inventions and discoveries, and at the same time to meet the high level of people's needs in all aspects, especially in the field of education and science, to conduct new creative researches, and to develop new teaching methods.

REFERENCES:

1. Abishova, Kh. The Use of Digital Technologies and Modern Teaching Approaches in Foreign Language Teaching. SCIENTIFIC WORK International Scientific Journal. 2025/Special Issue/ 32-37.
2. <https://aem.az/uploads/posts/2025/04/E%C4%B0%20xb-24-29.pdf>
3. Crystal, D. English as a Global Language. Second Edition. Cambridge University Press. - 2003, - 229 p.
4. https://culturaldiplomacy.org/academy/pdf/research/books/nation_branding/English_As_A_Global_Language_David_Crystal.pdf
5. Hunston, S. Corpora in Applied Linguistics. Cambridge University Press. Second Edition. – 2022. 360 p.
6. https://books.google.az/books?id=GLKzzgEACAAJ&printsec=frontcover&source=gb_s_summary_r&cad=0#v=onepage&q&f=false
7. Maahs, Ina-Maria., DeCapua, A., Triulzi, M. Digital Technology and Language Learning: insights from teachers of adult migrant learners. Published online by Cambridge University Press: 06 February 2025.
8. <https://www.cambridge.org/core/journals/recall/article/digital-technology-and-language-learning-insights-from-teachers-of-adult-migrant-learners/142FC833379E9DB74C0F417E8F0EB89E>
9. Mahmudov, M. Linguistic Problems of Artificial Intelligence. Baku, “Elm və təhsil”, 2024, 376p. <https://azerbaycandili.az/Literatures/Download/23109/S%C3%BCni%20intellekt-PDF.pdf>
10. <https://subjectguides.lib.neu.edu/linguistics/websources>
11. <https://guides.loc.gov/linguistics/electronic-resources/>