



**Olena Krupko** – Candidate of Chemical Sciences, Assistant Professor of the Department of Medical and Pharmaceutical Chemistry of Bukovinian State Medical University, Chernivtsi, Ukraine.

**Research interests:** research of theoretical and practical problems of studying general and inorganic chemistry in higher education institutions; use of innovative technologies in higher education, methodological approaches to the development and holding lectures and practical classes.

✉ [krupkoo@ukr.net](mailto:krupkoo@ukr.net)

🆔 <https://orcid.org/0000-0003-2799-3033>

UDC:378.018.43

<https://doi.org/10.32405/2411-1317-2022-1-18-23>

## DISTANCE EDUCATION AND INNOVATIVE TEACHING METHODS IN HIGHER EDUCATION OF UKRAINE DURING THE CORONAVIRUS PANDEMIC

**Abstract:** The spread of COVID-19 coronavirus disease in Ukraine in early 2020 contributed to global changes in the education system and intensive implementation of distance learning in all areas of the educational process. When choosing a model for the implementation of distance education, the teacher must take into account all its advantages and disadvantages in compliance with the requirements of discipline and organization of education in such a way as to ensure an adequate high level of knowledge of educational applicants. To ensure the quality of students' education and to improve it, it is necessary to introduce various innovative technologies in the pedagogical process in accordance with modern trends. The introduction of innovative methods in pedagogical activities for the purpose of modernization, development and use of educational innovative and information technologies of distance learning, promotes comprehensive training of a specialist for professional activities.

The structure of the innovative educational process and the model of implementation of distance education depends on the already known or own development of an interactive form and method of learning using pedagogical technologies, the volume of program material, the availability of electronic sources and their availability, the educational platform on the basis of which training is carried out, as well as on the readiness of teachers and students of education to changes that meet the conditions of a rapidly changing information society.

An effective combination of interactive teaching methods and systems of electronic educational platforms to ensure proper distance learning enables students to gain practical knowledge and skills as much as possible, to promote the development of communicative competencies, to ensure a high level of thinking and acquisition of common and integrated competencies, to obtain theoretical knowledge and turn them into professional practical skills and abilities.

The article discusses the development and formation, main advantages and actual disadvantages of distance education, taking into account training in the process of rapid implementation, modernization and adaptation of innovative teaching methods in the educational processes of Ukraine during the global COVID-19 pandemic.

**Keywords:** innovative methods, distance learning, higher education, information technologies, pedagogical activity, integration, self-development.

**Formulation of the problem.** Particularly active introduction and development of distance learning (DL) in higher education of Ukraine began along with the emergence of epidemic danger and the introduction of quarantine as a result of the spread of COVID-19 infection in Ukraine.

In the modern world, DL has been actively developed in various fields of education even before the spread of COVID-19. This trend has been facilitated by the fact that many professionals in need of advanced training or retraining do not have enough free time for the conventional full-time studying process. One of the important factors of the development and implementation of DL is the need for interaction between teachers and students in the pedagogical process, acquiring new knowledge, and letting students independently develop and master the acquired knowledge, obtain new skills and abilities, i.e. give the opportunity for self-development and improve their abilities.

It is important to note that the relevance of the need for DL stems from the fact that the development of the social process is concentrated in the information world, which allows for mass self-learning and information exchange.

A particularly relevant and important component of distance education is the introduction and use of innovative teaching methods in the process of modernization and reorganization of higher education in Ukraine.

**Analysis of sources and publications.** Both foreign and domestic scientists work on the development of theoretical provisions for the implementation of distance learning, who study and improve well-known theoretical information about this form of education not only in higher education but also in the educational process as a whole (Havrylova & Katasonova, 2017; Maiatina, Lysenko & Dmytriienko, 2021).

Specialists from the Ministry of Education and Science of Ukraine work simultaneously with scientists on the development and implementation of distance education in Ukraine. The Ministry has developed organizational and methodological recommendations for distance learning in extracurricular education (letter of the Ministry of Education and Science dated 19.05.2020 № 6/643–2020), which describes the general principles of organization of distance learning in extracurricular education, posted background information on tools and platforms, where you can teach remotely. Also, methodical recommendations on the organization of the educational process for the new school year have been prepared, a significant part of which is devoted to distance learning in extracurricular education (letter of the Ministry of Education and Science dated 17.08.2021 № 1/9–414) (Distance learning).

Innovative technologies in education are defined as the processes of emergence, development, and practical implementation of pedagogical innovations. Because Innovation is not only the creation and use of novation but also such changes that are decisive, accompanied by reorganizations in various activities and styles of thinking. Innovative pedagogical activity is based on the development, distribution, or application of educational innovations in pedagogical processes to promote and ensure the improvement of the quality and level of students' knowledge (Doronina, 2011; Koshechko, 2015).

**The relevance** of the study is that the use of distance education using interactive and innovative teaching methods, which is especially relevant during the spread of the global pandemic of COVID-19, is the basis of the modern development of higher education in Ukraine and requires research by practicing educators, to study the effectiveness of such forms of education and improving learning results.

**The article's goal** is to analyze the advantages and disadvantages of studying in distance education, to determine the main pedagogical technologies of innovative development of higher education in Ukraine.

**Presenting main material.** The start of the history of DL in Europe can be considered the emergence of regular mail, which resulted in the "correspondence training" in the late XVIII century.

In Ukraine, distance education is implementing for about 20 years. In 2002, the Ministry of Education and Science of Ukraine introduced an experiment in distance learning. The first Program of development of the distance learning system 2004–2006. was approved by the Cabinet of Ministers of Ukraine (Resolution of the Cabinet of Ministers № 1494 23.09.2003).

Present distance learning became a new step in the modernization of Ukrainian education and its adaptation during the global pandemic of COVID-19.

Due to all the problems that have arisen in Ukraine with the spread of COVID-19 infection, distance learning has become the main type of learning in all areas of the educational process. At the present stage of the development and modernization of higher education, the problem of introducing innovative technologies into the educational process is especially relevant and important.

The key basis in the innovative development of higher education is modernized pedagogical activity, which is based on modernization of pedagogical experience and focused on changes and development of the educational process in order to achieve better results, motivate to search and analyze information, transform theoretical knowledge into practical skills and abilities, professional growth and development. To implement the innovative development in full, the educator must have certain professional and personal competencies: the ability to formulate educational goals based on professional development; awareness of the content of educational activities; the ability to form an educational program based on individual approach to students; effectively and non-standardly organize the educational process; the ability to stimulate students' self-expression; be proficient in modern technologies, methods and forms of innovative learning; the ability to analyze; the ability for personal creative development; the ability to use innovative approaches and discoveries (Doronina, 2011; Koshechko, 2015).

For the introduction of innovative approaches in pedagogical activities, already known pedagogical technologies are most commonly used, which are classified as follows:

- structure-logical technologies, which provide for the gradual organization of the learning system, which will contribute to the logical sequence of formulation and solution of didactic tasks based on the selection of their content, forms, methods, and teaching aids at each stage of the process;
- integrational technologies, including didactic systems that provide integration of interdisciplinary knowledge and skills, various activities at the level of integrated courses;
- professional and business game technologies: didactic systems of using different games, which form the ability to solve problems on the basis of compromise choice;
- training technologies that include a system of activities to working out certain algorithms for solving typical practical problems with the help of a computer, namely: psychological training of intellectual development, communication, and solving management problems;
- IT-technologies that are implemented in didactic systems of computer-based learning on the basis of "Man-machine" dialogue with the help of various educational programs;
- dialogue technologies, in particular a set of forms and methods of teaching based on dialogue thinking in interacting didactic systems of the subject-subjective level (Doronina, 2011; Bystrova, 2015).

Given that the distance form of education involves learning using computer and telecommunications technologies that provide interaction of teachers and students at different stages of learning and independent work with information network materials [8], the teacher, in the process of implementing such technologies, must use not only modern but also interactive learning technologies in educational activities (analysis of specific situations, case method, business game method, learning in discussion, etc.). It is this approach to the educational process that develops students' logical thinking and the ability to thoroughly and briefly express their opinions. For example, the PRESS method includes such important steps as expressing one's opinion and point of view, explaining the reason and substantiating evidence for such an opinion, giving an example or additional arguments and facts confirming the above evidence, generalizing the opinion and conclusions. By offering such stages for students, regardless of their specialization, subject of study, or topic of study, the teacher forms a kind of plan on which the student should work constantly while filling it independently according to their mental abilities, knowledge, and skills. At the initial stage of using this method, it seems that the answers to the plan are mandatory, but in the process of learning, students without thinking about how to, acquire skills to form their own answers logically and reasonably on their own. The use of such innovative methods in the educational process, especially during distance education, allows the teacher to use a number of pedagogical technologies (informational, self-development, heuristic, structural-logical, computer, and others), which contribute to the transformation of all knowledge, skills, and abilities into professional competencies.

Any of the innovative teaching methods have their own advantages and disadvantages, therefore before choosing methods, forms, or means of teaching you need to consider the characteristics of the discipline, the nature of the study material, the amount of time spent studying the material, the level of general training of the group, features of the educational and material base of the educational institution, etc.

Distance learning involves active communication between teacher and student with the help of modern technologies, gives students the opportunity to choose the time and pace of learning by themselves, respectively, taking full responsibility for their learning and acquired skills. This approach in the educational process forms in students a high level of self-organization, communication skills, knowledge of information technologies, the ability to process unknown materials and draw appropriate conclusions, the ability to ask questions to clarify the material – all this together improve professional skills, that are necessary for the professional competencies of a specialist in any field of activity (Getta V.G., 2017; Distance learning).

If we consider and compare the most common forms of learning and methods of knowledge control in traditional education and distance learning, it should be emphasized that in its core remains the same lectures, seminars, laboratory classes, tests, and exams. However, changes did take place. For example, lectures no longer involve direct communication between the teacher and students but can be presented in the form of audio or video recordings or presentations. This allows students to listen to the lecture material repeatedly and not spend time on writing down the material, but on the other hand, it is impossible to clarify with the teacher unclear points, which is a negative aspect to mastering the material. Seminars and practical classes during distance education play an important role in clarifying unclear points from the new material, discussions of students with the teacher by means of videoconference, explanation of difficult topics. The teacher has the opportunity to assess the mastery of the material not only by the written works but also by the activity of students during such discussions. As for laboratory work, there are some difficulties in performing them, and, accordingly, students do not have the opportunity to master practical skills. However, it simplifies the conduct of a laboratory workshop using the Internet or multimedia technologies to show demonstrational experimental works.

The final stage in learning is the control of acquired knowledge and skills. The most informative in distance education are test questionnaires at each lesson and modular tests. The test results for each lesson reveal information about the level of knowledge of the material and problems that arose during the study and mastering of this topic. The teacher's comment on the performed test should be obligatory, which will give the opportunity for the student to finish solving problematic questions.

The effectiveness of the use of innovative methods in higher education institutions should be assessed not only by indicators of student achievement – it is necessary to consider changes in the minds of students and teachers (Kliap, 2015).

Thus, summarizing the above material, we can conclude that the spread of COVID-19 has accelerated the integration of distance learning in the educational process of higher education in Ukraine, contributed to the active modernization of the educational process via the Internet and wireless exchange of information between students and teachers. The active introduction of this form of education has shown that DL has a number of positive advantages that are not inherent in the traditional full-time form of education, in particular – it is a fundamentally new educational space that allows students to study at a convenient time without limitations, combine education with professional activity without taking a break from work (advanced training or retraining), gives the opportunity to use educational materials without restrictions, communicate independently via the Internet with a teacher (especially important for those who have psychological barriers associated with communication). In addition, each student has the opportunity to spend more effort and time on complex topics, and personal explanation for the student during the online consultation promotes more effective learning, encourages students to self-organization and creativity in the learning process, improves computer skills, and allows them to make independent responsible decisions. At the same time, the role of the teacher also changes, in particular, the teacher must constantly coordinate the cognitive process, improve their skills, increase creativity and skills in accordance with modern innovations.

Given such changes, the educational process through distance learning should be aimed at training a qualified professional who is able to think independently, proactively, and creatively, independently replenish their knowledge and be able to apply them. The use of various innovative methods in the educational process contributes to the quality and productive acquisition of knowledge, the ability to use the acquired knowledge in practice, the formation of professional skills, the ability to make decisions, which are extremely important components for creative development of the student's personality, which will further contribute to the improvement and development of professional experience.

Along with the advantages of distance learning, there are disadvantages and problems. One of the most important problems of DL is the lack of personal communication with the teacher and other students (although during the global pandemic of COVID-19 it is a positive side), the level of personal motivation of the student, the ability to study and master the material independently, lack of opportunity for practical use of acquired knowledge to obtain relevant skills, discussing issues with the teacher and explaining the situation with relevant examples, problems with Internet access, etc.

**Conclusions.** Intensive implementation of distance learning in all fields of education due to the spread of COVID-19 infection stimulated the gradual organization of a modernized training system, analysis of the results of the implementation of this form of education, the development of integration of inter-level knowledge and skills, creation and development of algorithms for solving typical practical problems, the use of a number of didactic systems as the most common pedagogical technologies in the process of introducing innovative approaches in the reorganization of the structure of pedagogical activities of distance education.

Didactic components (educational, methodological and information technologies) in the structure of distance learning occupy the main place and ensure didactic interaction of the teacher and the applicant, which contributes to effective training and obtaining professional competencies.

Distance learning is promising in the organization of the educational process and, despite all the shortcomings, has rapidly entered the educational process of higher education in Ukraine, taking the main place among the forms of education, especially in the last two years.

The introduction of innovative technologies in the educational processes of higher education and their use in pedagogical activities is a complex modernization of the pedagogical approach to the implementation of European standards in higher education of Ukraine, taking into account the change in the form of distance learning, and in order to increase the effectiveness of the competent approach to learning.

It is impossible to cover in full in this article all the problems that arise in the process of rapid implementation and integration of distance learning in higher education of Ukraine and the use of various innovative methods to improve the quality of education, so solving these problems and studying the possible consequences of this form of training on the effectiveness of the level of knowledge, acquiring practical skills and transforming them into professional competencies can be the basis for further research.

### References

- [1] Havrylova, L. & Katasonova, Y., (2017) Theoretical aspects of distance learning implementation in Ukraine. *Educational Discourse*, 1–2, 16–17. (in Ukrainian).
- [2] Maiatina, N., Lysenko, T. & Dmytrienko, O. (2021) Modern models of distance learning. *Ukrainian Pedagogical Journal*, 2, 84–95. (in Ukrainian).
- [3] Distance learning. Retrieved from <https://mon.gov.ua/ua/osvita/pozashkilna-osvita/distancijne-navchannya>. (in Ukrainian).
- [4] Doronina, N.N. (2011) Organization of the learning process in the university using active teaching methods. *Sociology of Education*, 3, 31–38. (in Russian).
- [5] Koshechko, K. (2015) Innovative educational technologies of learning and teaching in high school. *Pedagogy*, 1(1), 35–38. (in Ukrainian).
- [6] About the statement of the Program of development of the system of distance learning for 2004–2006 years. Resolution of the Cabinet of Ministers of Ukraine. No. 1494. (2003). Retrieved from <https://zakon.rada.gov.ua/laws/show/1494-2003-%D0%BF#Text>. (in Ukrainian).

- [7] Bystrova, Yu.V. (2015) Innovative teaching methods in higher education in Ukraine. *Law and Innovative Society*, 1 (4), 27–32. (in Ukrainian).
- [8] Adamova, I. & Golovachuk, T. (2012) Distance learning: a modern view of the benefits and problems. *The Origins of Pedagogical Skills*, 10, 3–6. (in Ukrainian).
- [9] Getta V.G., Yermak S.M., Dzhevaga G.V., Shulga O.M., Povecher I.V., Nosovets N.M., Kolyada A.M. (2017). Distance learning: didactics, methodology, organization [Text]: monograph. Getta V.G. (Editor) (in Ukrainian).
- [10] Distance learning. Retrieved from [vnz/org/ua/dystantsijna-osvita/pro](http://vnz/org/ua/dystantsijna-osvita/pro). (in Ukrainian).
- [11] Kliap, M. (2015) Innovative teaching methods in higher education as a tool for internationalization of higher education in Ukraine. *Higher Education of Ukraine*, 4, 45–53. (in Ukrainian).

**Олена Крупко**, кандидат хімічних наук, асистент кафедри медичної та фармацевтичної хімії Буковинського державного медичного університету, м. Чернівці, Україна.

### ДИСТАНЦІЙНА ОСВІТА ТА ІННОВАЦІЙНІ МЕТОДИ НАВЧАННЯ У ВИЩІЙ ОСВІТІ УКРАЇНИ В ПЕРІОД КОРОНАВІРУСНОЇ ПАНДЕМІЇ

Поширення коронавірусної хвороби COVID-19 в Україні на початку 2020 року посприяло глобальним змінам у системі освіти та інтенсивному впровадженню дистанційної форми навчання в усіх сферах освітнього процесу. Здійснюючи вибір моделі для реалізації дистанційної освіти, викладач має врахувати всі її переваги та недоліки із дотриманням вимог дисципліни та організації навчання так, щоб забезпечити належний високий рівень знань здобувачів освіти. Для забезпечення якості навчання студентів та з метою її підвищення у педагогічний процес необхідно впроваджувати різні інноваційні технології відповідно до сучасних тенденцій. Впровадження інноваційних методів у педагогічну діяльність з метою модернізації, розроблення та використання освітніх інноваційних та інформаційних технологій дистанційного навчання, сприяє комплексній підготовці фахівця до професійної діяльності.

Ефективне поєднання інтерактивних методів навчання та систем електронних освітніх платформ для забезпечення належного дистанційного навчання дає можливість студентам максимально отримати практичні знання та вміння, сприяти розвитку комунікативних компетентностей, забезпечити високий рівень мислення та набуття загальних і інтегрованих компетентностей, отримувати теоретичні знання та перетворювати їх на професійні практичні вміння й навички.

У статті розглянуто розвиток та формування, основні переваги та актуальні недоліки дистанційної освіти із врахуванням навчання в процесі умов стрімкого впровадження, модернізації та адаптації у навчальних процесах вищої освіти України інноваційних методів навчання в період пандемії COVID-19.

**Ключові слова:** інноваційні методи, дистанційне навчання, вища освіта, інформаційні технології, педагогічна діяльність, інтегрування, саморозвиток.