DOI: https://doi.org/10.34069/AI/2023.69.09.4

How to Cite:
Tretko, V., Vasiutina, T., Kolomiiets, I., Iievliev, O., & Kramar, V. (2023). Functions and principles of creating quality information support for the educational space of higher education institution. *Amazonia Investiga*, *12*(69), 51-60. https://doi.org/10.34069/AI/2023.69.09.4

Functions and principles of creating quality information support for the educational space of higher education institution

Функції та принципи створення якісного інформаційного забезпечення освітнього простору закладу вищої освіти

Received: August 2, 2023 Accepted: September 5, 2023

Written by:
Vitaliy Tretko[1]
https://orcid.org/0000-0003-3608-1378
Tetiana Vasiutina[2]
https://orcid.org/0000-0003-0253-1932
Inna Kolomiiets[3]
https://orcid.org/0000-0001-5355-9332
Oleksandr Iievliev[4]
https://orcid.org/0000-0003-1567-4131
Volodymyr Kramar[5]
https://orcid.org/0000-0001-8014-3711

Abstract

The article reveals the main provisions and shows the necessity of informatization of the educational space of the higher school at the current stage. The purpose of the article is to show the necessity and to define the main provisions of the informatization of the educational space of the higher school at the current stage to ensure the quality education of those seeking education. The methodology of the article characterizes the totality and connection of the following methodological techniques: competence, acmeological, systemic, interdisciplinary, personal-activity, comparative, prognostic; methodological principles of research; patterns of educational and professional activity; global trends in the development of informatization of the educational space of a higher school to ensure quality education of education seekers; trends of globalization. The article reveals the

Анотація

У статті виявлено основні положення та показано необхідність інформатизації освітнього простору вищої школи на сучасному етапі. Метою статті є показати необхідність та визначити основні положення інформатизації освітнього простору вищої школи на сучасному етапі для забезпечення якісної освіти здобувачів освіти. Методологія статті характеризує сукупність і зв'язок таких методичних прийомів: компетентнісного, акмеологічного, системного, міжпредметного, особистісно-діяльнісного, порівняльного, прогностичного; методологічні принципи дослідження; закономірності навчально-професійної діяльності; світові тенденції розвитку інформатизації освітнього простору вищої школи для забезпечення якісної освіти здобувачів освіти; тенденції глобалізації. У статті розкрито вимоги інформатизації освітнього простору вищої школи,

[1] Doctor of Pedagogical Sciences, Full Professor, Dean of the Faculty of International Relations and Law, Khmelnytskyi National University, Ukraine. WoS Researcher ID: AAO-9418-2021
[2] Doctor of Pedagogical Sciences, Associate Professor, Professor of the Department of Primary Education, Dragomanov Ukrainian State University, Ukraine. WoS Researcher ID: AAY-4161-2021
[3] Doctor of Philological Sciences, Associate Professor, Associate Professor of Ukrainian Language and Methodology Department, Pavlo Tychyna Uman State Pedagogical University, Ukraine. WoS Researcher ID: IAM-1262-2023
[4] Doctor of Pedagogical Sciences, Associate Professor, Assistant Professor of the Department of Pedagogy and Innovative Education, Lviv Polytechnic National University, Ukraine. WoS Researcher ID: FAJ-0193-2022
[5] Candidate of Philological Sciences, Senior Lecturer of the Department of German Philology and Translation Studies, Khmelnytskyi National University, Ukraine. WoS Researcher ID: HNS-1633-2023

requirements for informatization of the educational space of a higher school, lists the advantages, shows the main positions of the teacher's role in creating an informational educational space using computer technologies. The most important educational areas of high-quality education of education seekers with the help of informatization of the educational space of the higher school during pedagogical interaction, which create decent conditions in educational activities, are singled out.

Keywords: institutions of higher education, informatization of the educational space, students of higher education, information technologies, functions and principles.

перераховано переваги, показано головні позиції ролі викладача при створенні інформаційного освітнього простору засобами комп'ютерних технологій. Виокремлено найважливіші освітні напрями якісного навчання здобувачів освіти за допомогою інформатизації освітнього простору вищої школи під час педагогічної взаємодії, що створюють достойні умови в освітній діяльності.

Ключові слова: заклади вищої освіти, інформатизація освітнього простору, здобувачі вищої освіти, інформаційні технології, функції та принципи.

Introduction

The modern world, in the conditions of competition in all spheres, and globalization of social life, attaches primary importance to higher education, and modern educational technologies that contribute to the successful innovative development of the state. With such innovations in development, the main condition of the new paradigm of higher education should be the modern formation of the knowledge economy. At the same time, this increases the importance of higher education and complicates the task of innovative qualified training of future competitive specialists who support and shape the image of the institution of higher education in which they learning and contribute to its development in the educational space of the modern world. Therefore, it is necessary to create:

- an innovative environment, a special information system, which includes information resources and contributes to their actualization;
- an educational system that allows technological stages of learning, provides an opportunity to integrate with other systems, use other banks of information, to give new content to the educational process, which embodies the modern realities of the information society. Such goals in a higher education institution can improve the information and educational environment, which makes it possible to make the transition to an educational open system and improves its technological base (Yashchuk, 2021).

The higher school initiates the improvement of the competitiveness of its graduates in the labor market and constantly contributes to the improvement of the quality of education while reaching more of its students. Taking into account the capabilities of each student of education, his needs, and requirements for processing information and obtaining new knowledge, in higher education it is necessary to create a system of informatization of the educational space, properly ensure a high level of access to informing students of education, obtaining information that will satisfy student needs and increase the image of higher education institutions education The constant informatization of the educational space of the higher school, in particular the development of information and communication technologies, set the goal of organizing effective innovative training, and not only provided the opportunity for higher education institutions to intensify the educational process. This speaks of the great possibilities of information technologies (Kalusenko & Kartashova, 2020).

Informatization in higher education is becoming a necessary phenomenon in the development of modern innovative education, while the educational system must be flexible, sufficiently inertial to change its methodology in time and respond to the times, as well as to promote solid educational knowledge of education seekers, for further orientation in modern world space. An increase in the importance of fundamental knowledge is possible in higher education with the informatization of the educational space, which will constantly develop and make education 100% innovative and modern.

Computer skills are of primary position for informatization in higher education and in general in the modern scientific world, with the

mandatory and constant change of methods and methods of scientific research.

In modern society, the most important problem is the high-quality and innovative training of a competitive specialist, which includes the mandatory use of smart technologies, modeling of the educational environment, and computer technologies of an innovative nature and global scale. Solving such a problem is possible with the help of specific functions and principles when creating high-quality information support for the educational space of a higher education institution.

The purpose of the article: to show the necessity and to define the main provisions of the informatization of the educational space of the higher school at the current stage to ensure the quality education of those seeking education.

Literature Review

I. Yashchuk (2021) offers ways to modernize the educational space of the higher school in the conditions of global changes. Proved the need for the transition of the higher school to a distance form of education, and showed the need for informatization and computerization of education with this approach. The impossibility of quality professional training of a future competitive specialist without the development of information literacy has been proven, which indicates the need for constant information and technological updating in every institution of higher education. Ways of creating an informational and educational environment in which the personal and professional qualities of specialists are formed, and educational work is organized directly, with the aim of high-quality training of future competitive specialists have been revealed. The example of the Pedagogical Faculty of the Khmelnytskyi Humanitarian and Pedagogical Academy shows the innovative work of the educational environment using the Moodle educational platform. The advantages of the informatization functions of the educational space of the higher school are proven and their pedagogical necessity is shown.

I. Chaika (2012) showed the advantages of the informational setting of a higher school. The main principles of informatization of the educational space of a higher school are named: independence, accessibility, activity, reflexivity, interactivity, integration, redundancy, individualization, sensitivity, renewability, versatility, pedagogical expediency of using information technologies in the educational space of a higher school. The principles are important and necessary when solving the main tasks of information processing and its collection.

V. Kalusenko, & L. Kartashova (2020) considered the issue of training students in the development of the higher school, economy, informatization of society, and science. They proposed a scheme for the introduction of electronic educational environments into the educational process, which is currently the main task for institutions of higher education. The informatization of the educational space of the higher school is considered a process of innovative transformations of the content, organizational forms of training students of education, and changes in methods during the transition of the student of education to life in the conditions of the information society.

Methodology

Research methods were used at various stages of the study of the informatization of the educational space of the higher school:

– *theoretical:*

- a generalization of the analysis of educational and methodological philosophical, psychological, and pedagogical modern literature, articles in scientific publications was carried out to explain the national progress of the problem of informatization of the educational space at the present period of the change of the educational field, the selection of conceptual ideas and the disclosure of their essence. This approach made it possible to distinguish the academic and operational basis of the informatization of the didactic space;
- modeling and synthesis allowed generalizing information about the essence of the research, to form the main provisions of informatization of the educational space;

– *empirical:* psychological-pedagogical observation in the process of educational activity of education seekers in the informational educational space to clarify the level of formation of their educational competence within the limits of the informatization of the educational space.

The research conducted with the help of the used research methods is based on the practical application of the information educational space,

which provides an opportunity for students to increase the effectiveness of skills, abilities, knowledge and through compliance with the process and system of balance, purposefulness, openness, and interdependence of the components of the information educational space. The training of the imaginary and organizational basics of the training of future specialists requires the implementation of a scientific search for the informatization of the educational space of a higher school at the current stage to ensure the high-quality education of education seekers by the selected concepts.

The methodological concept characterizes the totality and connection of the following methodical methods: competence, acmeological, systemic, interdisciplinary, personal-activity, comparative, prognostic; methodological principles of research (substantial analysis, objectivity, unity of logic and history, comprehensiveness, holistic study of systemic processes and pedagogical phenomena); patterns of educational and professional activity; global trends in the development of informatization of the educational space of a higher school to ensure high-quality education for those seeking education; globalization trends.

The theoretical concept reveals the conceptual provisions of the optimization of the informatization of the educational space of the higher school at the current stage to ensure the high-quality education of education seekers, which is the basis for improving the professional competence of specialists, taking into account the specifics and the positive implementation of best practices. The professional training of future specialists at the modern stage through informatization of the educational space of the higher school at the modern stage contributes to ensuring the quality education of future specialists and is based on psychological-pedagogical, philosophical, sociocultural principles, covering scientific approaches of empiricism, a holistic approach to the education of a specialist, pedagogy, sociocultural paradigm, humanism, social constructivism, neopragmatism.

The prognostic-practical level of the research allows a qualitative study of approaches to the development of professional competence and professional training of specialists by informatization of the educational space of the higher school at the modern stage to ensure quality education of those seeking education, analysis of systems of professional training of specialists and substantiation of the ways of modernization of higher education.

Results and Discussion

The 21st century was named the century of quality education in connection with the informatization of the educational space of the higher school, associated with the information revolution, during which intelligence, information, and knowledge occupy the role of the main driving force and actualize their status in the system of social life. Education reflects the peculiarities and specifics of the expansion of the current data society, which needs modernization and transformation. In connection with the growth of information flows, the acceleration of the pace of people's lives, and the improvement of technologies, in the educational space of a higher school, informatization is due to the relevance and necessity of the needs of social development. As a guarantor of the intellectual future potential of the nation, the main priority is the informatization of education, health care, science, and culture.

G. Yordan, & H. Yordan (2020) consider the informatization of education "as a process of changing the content, methods and organizational forms of student training at the stage of its transition to lifecycle in the circumstances of the information society, the creation and use of information technologies to increase the efficiency of activities carried out in the education system".

Computer technologies, informatization of the educational space, and the global Internet network are necessarily present in all areas of human life: in everyday life, and the professional sphere. In connection with the constant practice of information skills by students, a high level of skills and knowledge in the special innovative computer field is necessary. Therefore, the need to provide higher education institutions with various types of special programs for studying the material and practical innovative technologies for the formation of knowledge in the field with the help of information technologies has been proven. Information technology is constantly improving, which leads our society to constant development (Biletska et al., 2021). The development and formation of the information-educational environment in higher education institutions were updated by:

- the relentless development of information knowledges;
- the openness of educational systems;

- the need for electronic educational resources in all spheres of life;
- the rapid growth of the level of computer skills of the students in the educational process;
- virtualization of the educational process;
- transition to an active, new form of implementation of the education process;
- the need for social partnership contacts and informational interaction of education seekers;
- monitoring of educational activities (Gavrilyuk, 2016).

The purpose of creating an automatic information and educational situation of a higher school is to fully satisfy the educational needs of students of all levels of education, all specialties, and information and educational resources, regardless of where the students are, what educational resources are currently needed by students, what services they need when using modern information technologies (Bykov, 2010).

The advantages of informatization of the higher school are the possibility of:

- organization of the educational process, and educational events in electronic form;
- planning and implementation of educational space at different levels, programs, and forms of education;
- replacement of the reproductive activity of the educational space acquirers with a creative and consultative one;
- submission of reference information for training, and mandatory educational material;
- promotion of communication interaction between the management apparatus of the institution, students, and teachers;
- providing participants in the educational process with access to information related to the organization of the educational process, planning of training, and monitoring of educational activities;
- the use of the educational process of information materials, effective teaching-methodical support of constantly updated complexes (Gunko, 2014).

When creating an informational educational space in a higher school, the following requirements should be taken into account:

- *technical:* Wi-Fi technologies, network availability, computer equipment;
- *software:* integration, interaction, security issues;
- *human resources:* psychological readiness, availability of specialists, ICT literacy;
- *academic:* compliance with educational programs, methodical content;
- *social:* cultural, normative-legal, and ethical aspects (Kuchai et al., 2021).

Studying the organization of the educational process, the information-search activity of education seekers in the information-educational space, the educational environment is considered a system and consists of the following components:

1) multilevel information resources, which are program-methodical, cultural, problem-oriented, and intellectual, consist of knowledge and work technology with the application of search, information storage, it's processing and practical application;
2) information infrastructure to ensure the development and functioning of the environment during the educational process (Chumak & Bondarenko, 2023).

The use of innovative technologies in the information and educational environment and the acquisition of information in the computer network optimizes the verbal communication of students and makes the contact among the teacher and the student innovative. Implementation of the innovative nature of education with the use of modern technologies takes place with the mandatory support of education seekers and in the form of an innovative program, a schedule of updated modules of educational classes according to the innovative program. Innovative support from teachers is carried out individually for each student to strengthen the integration of the educational process, and increase interdisciplinary training to include academic disciplines in a disciplinary complex that is unified. In the process of such an educational process, the students of education maximally acquire the skills of using information technologies in modern research, educational, and scientific activities (Kuzminskyi et al., 2018).

The information and educational environment provides the simultaneous solution to the following tasks:

- organization of educational activities for education seekers using elements of e-learning;

– formation of skills and abilities of students with the help of an informational educational space with the help of computer technologies for a high-quality educational process and the provision of developmental, educational, reflective, and informational functions, which are necessary for further professional activity.

The educational function, which ensures the operation of all components in the structure of the informational educational space using computer technologies and organizes the monitoring of the quality of education, control of the learning process, and the application of educational functions, is fundamental for work in the information educational space using computer technologies. Such a function ensures the competitiveness of a trained specialist to work in a professional environment. The importance of the implementation of the educational function depends on the strength, completeness, and awareness of scientific and theoretical knowledge that is being formed, skills and practical abilities, and experience of practical, intellectual, and creative activity within the field of training chosen by the student of education. The educational function is related to the educational function and is realized in our time necessarily with the help of informational educational space using computer technologies. The following components are involved in its work: technological-procedural, resource-content, and subject-social, which work successfully with the help of information and educational space using computer technologies and, as a result, allow to form the motives of activity, the future professional activity of specialists, positive qualities personalities, value orientations, professional values, their views on life, worldview, interests, aesthetic and moral ideas (Oseredchuk et al., 2022).

The developmental function ensures the change of the following spheres of the student's personality: emotional-volitional, intellectual, need-motivational and prepares the future competitive specialist for conscious professional activity. The main position for the implementation of this function is the selection of such resources as informational, scientific-didactic, and technological and their mandatory inclusion in interactive activities with the help of informational educational space using computer technologies (Dotsenko, 2016).

The information function is related to the selection, processing, distribution, transmission, storage, and use of scientific, educational, moral-aesthetic, and worldview information to meet all the needs of education seekers. It is this function that forms in the students of education the ability to implement information technologies to solve educational and educational tasks, to implement information interaction (Plakhotnik et all, 2022).

The reflective function of the informational educational space using computer technologies is aimed at the development and optimization of self-improvement and self-development of the subjects of the informational and educational environment and provides for:

– critical analysis of attitude towards oneself as a future competitive specialist, personality, analysis of interests, motives, emotional-sensual state, value orientations of activity, assessment of activity, own behavior, state of development of all one's professional activity;
– identification of cause-and-effect relationships, successful interaction, reasons for the state of development of the informational educational space, significance of the educational process, etc. The result of the implementation of the reflexive function with the help of the information educational space using computer technologies is manifested in the improvement of actions that purposefully affect the productive implementation, improvement, and group of the educational procedure during the interaction of the subjects of the information educational space (Shchyrbul et al., 2022).

The function of socialization of an individual to work in an informational educational environment using computer technologies ensures the development of relations between members of society and social institutions. The activity of the subject in the informational and educational space, which is determined by socio-cultural, ethnic realities, and mentality aimed at the application of innovative approaches of mastering the self-development of the individual, is determined by the universal human need for a goal-oriented and competitive specialist by values, norms, rules, traditions, methods of activity. The result of the influence of the function of socialization for the realization of a high-quality informational educational space using computer technologies is the ability of education seekers to find non-standard solutions to problems in situations, the ability to exercise their civic and moral choices, the formation of the worldview of education participants, social activity, the harmonization of their relations, the

development of universal values, the ability to carry out creative activities, self-education and self-development in the team (Yashchuk, 2021).

The educational information space when using computer technologies provides an opportunity for students to obtain educational information in a detailed, open form not during the organization of the educational process, but before the beginning of education. The information and educational environment provides equal access to information for students and teachers for possible exchange and dialogue in ways of cognitive activity, ensuring their cooperation, subject-subject relations, and values. With the help of informational educational space using computer technologies, it is possible to create conditions for the educational activities of students and the personalization of their educational communications. This will be possible only under the condition of compliance with the set of principles of implementation of the information and educational environment, and its possible potential: accessibility, activity and independence, reflexivity, interactivity, integration, redundancy, individualization, versatility, sensitivity, renewability. The justification of such principles is influenced by the logical foundations of the process of knowledge acquisition, the theory of knowledge; regularities of the functioning of the psyche of the individual, psychological, pedagogical, social, and epistemological regularities.

The principle of activity and independence provides for the internal motivation of obtaining an education and requires an active attitude of education seekers to the use of various innovative methods of organizing the educational process, and information objects.

The principle of reflexivity promotes the awareness of all parameters of the education process, own changes, and methods of activity. Reflection is formed at each stage of personality development under the influence of the way of life, it is based on the inner freedom of the future specialist, which requires self-control of one's actions and deeds.

The principle of interactivity makes it possible to create information support in the mode of exchange of operations and actions and the mode of interactive dialogue.

The principle of integration provides for the interconnection of communications with the help of an informational educational space with the goals and content of education in a higher education institution using computer technologies, as well as based on interdisciplinary connections, promotes the unification of educational information into problem-thematic cycles that combine related disciplines and courses into single educational areas.

The principle of redundancy accommodates a certain amount of information to ensure an informational educational space, the mastery of which makes it possible to collect the necessary data, a broad orientation for the independent determination of important educational conditions that ensure the solution of the task set by education. At the same time, information that is redundant for the relevant needs of the student of education is regulated by the requirements of its optimality, this information expands the spectrum of ways to solve a scientific problem or educational, indicative possibilities of a student (Kuchai, 2017).

The principle of individualization ensures the correspondence of individual characteristics of students to information provision, level of training of students, their age-related cognitive abilities, scientific interests, and professional specialization. The creation of information support in the informational educational space should take into account the quality and volume of educational tasks and their complexity.

The principle of versatility involves the practice of necessary educational information and communication skills, such as hypertext blocks, electronic manuals and textbooks, virtual simulators and environments, educational websites, electronic libraries, encyclopedias, handbooks, portals, interactive video, electronic magazines, multimedia educational systems, etc. A modern institution of higher education should today be a complex of variable, different educational communications that use information technologies to create information support of quality education in an informational educational space in which it is possible to acquire information and logically build one's educational trajectory (Kuchai & Kuchai, 2019).

The principle of sensitivity is necessary to provide feedback to the students of teaching for high-quality and quick assimilation of courses and disciplines of study in the information space of education.

The principle of updateability requires correction, the constant addition of information, updating of educational information, and ways of

presenting it to students. In the conditions of creating information support in the informational educational space, there is a need for a constant increase in the volume of new knowledge, the application of innovative techniques of technology, the necessary solution of the tasks, constant monitoring of the quality of knowledge, accounting for positive changes in the education process. With this approach, preference is given to information technologies that make it possible to make permanent additions and even changes to the information support of the educational process in a short period, to transfer new information to students of education in a few seconds via the Internet (Kuzminsky et al., 2021).

The analyzed principles realize the didactic potential of the informational and educational setting, they are interconnected and contribute to the professional and cultural self-projection of the individual.

Therefore, we see that the creation of information provision in the informational educational space within the framework of the analyzed principles is a necessary basis for ensuring a competitive level of preparation of education seekers for professional activities. These principles are also important and necessary for solving tasks of collecting and processing information (Chaika, 2012).

We agree with V. Bykov (2008, 2019), that when studying the influence of the worldwide implementation of information skills on the functioning of the educational situation of higher education organizations, it is required to single out important educational directions of the subjects of education during pedagogical interaction, which should create worthy conditions for educational activity that will be qualitatively implemented with the help of isolated functions and principles in the creation of a high-quality information provision of educational space of a higher education establishment. Let's list the following conditions:

- electronic educational profiles that provide promising directions for the educational activities of teachers and students, and contribute to updating the characteristic features of innovative education;
- electronic educational resources for educational activities;
- educational social networks that support an open informational and educational environment in cooperation;
- innovative pedagogical technologies that create a new organization of education and are based on work in an informational and educational environment using the means of computer-oriented educational systems of methodological purpose;
- computer-oriented systems for monitoring the quality of educational activities that supplement traditional ones.

Therefore, the integration of information technologies into education will allow the creation of a high-quality environment of information and pedagogical activity in higher education, in particular:

- improvement of the organizational conditions for the making of information funding in the information and educational space;
- increasing the efficiency of the informational educational space by introducing innovative mechanisms of interactivity of the educational process, visibility of the use of sources of information support in the educational space;
- compression of information in time and space due to the possibility of expanding and collapsing it;
- optimization of students' work pace (choice of individual educational trajectory, individualization of education, differentiation);
- effective implementation of interdisciplinary connections in the informational educational space;
- based on the informatization of individual functions, optimization of the teacher's informational and pedagogical work;
- improving the conditions of educational activity by creating positive motivation in the student, interest through an interest in the computer, ensuring a positive emotional state of the individual, humane attitude towards the individual, development of the information culture of the student, creative and research, qualities through self-discovery, self-realization, reflection (Jordan & Jordan, 2020).

In a higher school, the educational environment contains methodical tasks, test tasks for independent work and monitoring the quality of education, educational-methodical complexes, etc., which implement, by the needs of the formation of professional competencies of students, the content of educational disciplines.
The information environment of the higher school provides equal access to information

resources for everyone and creates an opportunity to implement all types of interaction: presentations, e-mail, and chats, which contributes to the high-quality interaction of all subjects of the educational environment. At the same time, the role of all focuses in the information environment is changing.

Let us distinguish the role of the teacher, which is essential for the implementation of functions and principles for the creation of high-quality information support in the educational space of a higher education institution and is manifested in the following positions:

- acts as a disseminator of knowledge,
- performs the part of a consultant and coordinator in the educational process, and students of such an educational process are its subjects, where their training is aimed at acquiring and developing professional competencies (Kalusenko & Kartashova, 2020).

Conclusions

The necessity and main provisions of the informatization of the higher school at the modern stage are shown and revealed to ensure high-quality training for those seeking education and the creation of information by profession with the help of information technologies. The purpose of creating of a higher school is to fully satisfy the educational requests of students of all levels of education, all specialties, and information and educational resources, regardless of where the students are, what educational resources are currently needed by students, what services they need when using modern information technologies.

The advantages and requirements of informatization of the educational space are listed. The educational environment is considered as a system consisting of such components, which are considered in the article. The main positions of the teacher's role in creating an informational educational space using computer technologies are shown. The important educational directions of education seekers with pedagogical interaction, which should create decent conditions for educational activity, are listed:

The main functions of the information and educational space have been identified and analyzed.

With the help of the informational educational space, it is possible to create conditions for the educational activities of students using computer technologies. This is possible only under the condition of compliance with the set of principles of information and educational environment implementation (accessibility, activity and independence, reflexivity, interactivity, integration, redundancy, individualization, versatility, sensitivity, and updateability), which is substantiated in the article.

Bibliographic references

Biletska, O., Kuchai, T., Kravtsova, T., Bidyuk, N., Tretko, V., & Kuchai, O. (2021). The Use of the Activity Approach in Teaching Foreign Languages in Higher Education Institutions. *The Romanian Journal for Multidimensional Education*, 13(2), 243-267. https://doi.org/10.18662/rrem/13.2/420

Bykov, V.Yu. (2008). *Models of organizational systems of open education*: monograph, Kyiv: Ataka, 684.

Bykov, V.Yu. (2010). Modern tasks of informatization of education. *Information technologies and learning tools*, 1(15). https://journal.iitta.gov.ua/index.php/itlt/article/view/25/13

Bykov, V.Yu. (2019). Innovations in the organization of research and development in the field of information and communication technologies in education in light of the challenges of the XXI century. *Actual problems of psychology: coll. of science works*, 8(10), 55-74. http://appsychology.org.ua/data/jrn/v8/i10/7.pdf

Chaika, I. (2012). Principles of realizing the potential of the information and educational environment of universities in the context of personal dimensions of training future teachers. *Scientific Bulletin of the Uzhhorod National University*, 24, 194-197.

Chumak, A.S., & Bondarenko, T.V. (2023). *Information and educational environment of a higher educational institution.* Department of Computer Science and Information and Communications Technologies. https://informatika.udpu.edu.ua/?page_id=1331

Dotsenko, I.O. (2016). Information technologies of learning – methodology and technology of the educational process using the newest electronic tools. *Mining Herald*, 101, 178-182.

Gavrilyuk, V.Yu. (2016). Theoretical aspects of the creation and functioning of the

information-educational environment of a modern extracurricular educational institution. *National Education*, 3(30), https://www.narodnaosvita.kiev.ua/?page_id=4261

Gunko, N.A. (2014). Modern informational and educational environment as a factor in improving the professional and pedagogical training of the future teacher. *Scientific Notes of the Ternopil National Pedagogical University*, 3, 43-49. http://nzp.tnpu.edu.ua/article/view/63761

Jordan, G., & Jordan, H. (2020). Informatization of education as a basis for the development of the information society. *Innovative technologies of digital education in higher and secondary schools of Ukraine and the countries of the European Union "Modern information technologies and innovative teaching methods: experience, trends, perspectives"*, 5, 115-117.

Kalusenko, V., & Kartashova, L. (2020). Theoretical foundations of specialist training in the information environment. *Bulletin of postgraduate education*, 13(42), 87-105.

Kuchai, O., Yakovenko, S., Zorochkina, T., Okolnycha, T., Demchenko, I., & Kuchai, T. (2021). Problems of Distance Learning in Specialists Training in Modern Terms of the Informative Society During COVID-19. *International Journal of Computer Science and Network Security*, 21(12), 143-148. https://doi.org/10.22937/IJCSNS.2021.21.12.21

Kuchai, O.V. (2017). Cloud technologies as a leading tool for informatization of higher education. *Herald of Cherkasy University*, 7, 47-51.

Kuchai, T., & Kuchai, O. (2019). Ensuring the quality of higher education in the European educational space. Scientific journal of the Vasyl Stefanyk Pre-Carpathian National University. *Educational space of Ukraine*, 16, 15-19. https://doi.org/10.15330/esu.16.15-19

Kuzminsky, A., Kuchai, O., Bida, O., Chichuk, A., Sigetii, I., & Kuchai, T. (2021). Distance learning in the training of specialists in institutions of higher education. *Modern information technologies and innovative methods of training in the training of specialists: methodology, theory, experience, problems: a collection of scientific papers*, 60, 50-57. https://acortar.link/kYfk8l

Kuzminskyi, A.I., Kuchai, O.V., & Bida, O.A. (2018). Use of Polish experience in training computer science specialists in the pedagogical education system of Ukraine. *Information Technologies and Learning Tools*, 68(6), 206–217. https://doi.org/10.33407/itlt.v68i6.2636

Oseredchuk, O., Mykhailichenko, M., Rokosovyk, N., Komar, O., Bielikova, V., Plakhotnik, O., & Kuchai, O. (2022). Ensuring the Quality of Higher Education in Ukraine. *International Journal of Computer Science and Network Security*, 22(12), 146-152. Doi: 10.22937/IJCSNS.2022.22.12.19

Plakhotnik, O., Strazhnikova, I., Yehorova, I., Semchuk, S., Tymchenko, A., Logvinova, Ya., & Kuchai, O. (2022). The Importance of Multimedia for Professional Training of Future Specialists. *International Journal of Computer Science and Network Security*, 22(9), 43-50. https://doi.org/10.22937/IJCSNS.2022.22.9.7

Shchyrbul, O., Babalich, V., Mishyn, S., Novikova, V., Zinchenko, L., Haidamashko, I., & Kuchai, O. (2022). Conceptual Approaches to Training Specialists Using Multimedia Technologies. *International Journal of Computer Science and Network Security*, 22(9), 123-130. https://doi.org/10.22937/IJCSNS.2022.22.9.19

Yashchuk, I. (2021). Information and educational environment of a higher education institution: a practice-oriented approach. *Innovation in Education*, 13(1), 62-72