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Formation of students' information culture as a component of digital university development

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Abstract.
The article considers the theoretical and methodological aspects of the formation of students' information culture as a component of digital university development. The main methodological approaches, pedagogical principles, and conditions that ensure the effective formation of information culture are identified. The key components of information culture are outlined, in particular, cognitive, activity, and value-motivational. The role of the information and educational environment, digital ethics, educational communication, and integration of digital technologies into the learning process is studied. The conceptual model of a pedagogical system that contributes to the development of students' digital competence and their adaptation to the digital society is presented.

Keywords:
information culture
digital university
digital competence

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The formation of students' information culture involves a purposeful process of developing their information worldview, value-motivational orientations, and basic competencies of independent information activity [1, p.2]. Considering the diversity of this process, its effective organization requires the creation of an appropriate pedagogical system that includes interrelated processes, methods, and teaching aids. For a science-based design of such a system, it is necessary to apply a number of methodological approaches that allow covering various aspects of the formation of students' information culture.

One of the fundamental approaches is the philosophical and methodological one, which defines the information society as a new stage of civilization development [2, p.52]. In modern conditions of education digitalization, students' information culture should be based on understanding the role of information as a resource that forms personal and professional competencies. This approach makes it possible to consider information culture not just as a set of technical skills, but as an integrated system of knowledge, skills, and values that facilitates the effective adaptation of an individual to the digital environment.

The next important approach is the cultural approach, which allows researchers to consider information culture as part of the general culture of the individual [3, p.61]. It emphasizes the relationship between universal human values, social norms, and information skills. According to this approach, the formation of students' information culture should be based on the integration of digital technologies into the educational process in order not only to transfer knowledge but also to develop critical thinking, ethical norms of working with information, and to form a responsible attitude towards digital content.

The axiological approach focuses on the value aspect of information culture, defining it as an important element of personal development in a digital society. It allows students to develop a responsible attitude to the use of information resources, ensuring awareness of the social and ethical aspects of the digital space. The implementation of this approach contributes to the development of competencies that help students navigate the huge flow of information, separate

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reliable sources, and avoid manipulative influence [4, p.53].

The system-activity approach focuses on the stage-by-stage development of information culture through the practical application of the acquired knowledge in educational and professional activities. It involves the students' inclusion in various types of information activities: digital content creation, analytical work with data, critical analysis of media resources, and work in digital environments [5;6]. This approach allows students not only to acquire knowledge but also to apply it in practice, which helps to consolidate information and digital competencies.

The last but not least is the contextual approach, which ensures the interconnection of information culture with the future professional activities of students. It involves practice-oriented training, integration of digital technologies into professional disciplines, use of active teaching methods that simulate real situations of professional activity [7, p.1224]. Due to this approach, students can apply information technologies not only in their study but also in their future work, which increases their competitiveness in the labor market.

Thus, the formation of students' information culture involves the use of active teaching methods, personal involvement of both students and teachers, their interaction to achieve a common goal - the competent personality development of a future specialist.

Based on the above methodological approaches to organizing the process of information culture formation, let us consider the principles that provide a practice-oriented basis for this process. We believe that the design of a pedagogical system that contributes to the effective formation of university students' information culture can be based on the following pedagogical principles:

–Systematic and value approach (corresponds to the basic principle of the information society - the principle of universal access to information). Information culture is a systematic characteristic of the individual: a person should be aware of the diversity of information resources and be able to use them effectively;

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– Stage-by-stage formation and continuity (based on the achieved level of competencies and support for the concept of lifelong learning). From motivation and mastering the tools for working with information, the student gradually moves to an individual approach and a critical attitude to their own information culture, and then to practice-oriented information activities;

– Modeling and structured learning (distribution of the required professional competencies into disciplines and training modules). Educational standards of higher education provide for the mastering universal, general professional, and special competencies, which include digital skills. It is advisable to select separate modules within the framework of general professional training and develop a specialized discipline for the formation of students' information culture;

– Promising and holistic approach that ensures the quality of the educational process.

The application of these principles in the complex can become the basis for the development of content, organizational and pedagogical means of the model of information culture formation of digital university students. In addition, the effective and systematic formation of students' information culture is possible if the following principles are observed:

- actualization of the value and worldview aspects of the educational content;
- leading role of social and pedagogical interaction of participants in the educational process;
- vigorous activity development of students based on a combination of cognitive, research, educational and practical activities [8, p.76].

The need to actualize the value and worldview aspects of education is due to the decline in importance of fundamental values among students, and the eclecticism of their ideas about ideals, norms, and principles of attitude to the world. This may lead to a disregard for professional and ethical norms in future activities. In the context of the digital transformation of education, it is especially important to preserve universal human and national values, which are the

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basis for the formation of a responsible attitude to information culture. Formation of students' information culture based on value and worldview principles will contribute to solving current social challenges.

The importance of social and pedagogical interaction in the digital educational environment is constantly growing. The conditions of communication are changing, the methods of knowledge transfer, organization of the learning process and information accessibility are transforming. Social and pedagogical interaction involves not only the exchange of information between participants in the educational process but also the acquisition of knowledge about the structure, methods of storing, and searching for information. Such interaction is necessary for the formation of students' information culture and ensuring an effective learning process.

The quality of interaction in the digital educational environment is determined not only by technical parameters but also by information and educational resources, the level of training of students and teachers, their ability to critically evaluate information and use it responsibly. Students need to master the basic skills of working with digital resources: search, analyze, and critically evaluate information, adhere to the principles of information security and ethics. For their part, teachers need to know how to create and use digital learning resources, apply modern online interaction technologies, and support students' learning motivation in the digital environment.

The principle of vigorous activity development involves a harmonious combination of cognitive, research, and practical aspects of learning activities. It aims to develop students' digital competence, ability to work with information resources, and effectively use digital technologies in professional activities. The educational environment should stimulate students to active information activities, including independent search, analysis, interpretation, and application of information for educational and professional goals [9, p.190].

Some researchers note that in order to ensure an effective process of forming students' information culture, the

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modeling method can be used [10;11]. Pedagogical modeling allows creating and implementing effective educational strategies that promote the development of digital culture. In our opinion, in designing a pedagogical system, it is advisable to use a seven-element model of the educational process, which includes learning objectives, content, educational communication, students, teachers, quality assessment, and a further system of educational improvement.

The main goal of the pedagogical system is to form students' level of information culture necessary for learning in the digital environment and further professional activity in the digital economy [12, p.31]. This is achieved through the use of pedagogical resources of the university, opportunities for self-education and personal development of students.

The main goal is divided into several subgoals, each of which reflects the stages of information culture formation: acquisition of digital literacy, development of digital competencies, and formation of a digital worldview at the axiological, reflective, and motivational levels. Accordingly, the following subgoals can be identified:

- Formation of digital literacy, which includes the development of a cognitive system of ideas, knowledge, and skills in working with digital information, as well as mastering the technological foundations of information culture.

- Formation of digital competencies, which involves the ability and readiness to work in the digital information environment, development of practical skills in managing information flows, and mastering basic information competencies as an integral part of professional culture.

- Formation of a digital worldview that reflects a value attitude to information activities in the learning process and future professional activities, which promotes positive motivation to master digital culture.

Each of the subgoals is detailed into specific objectives. The first subgoal, the formation of digital literacy, involves the following objectives:

- Mastering the basic concepts of information activity, including the essence and classification of information,

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rules of information exchange, features of the digital educational environment, and principles of knowledge formalization.

– Development of basic skills in working with digital resources: searching for information on the global network, using office programs and communication platforms for educational activity.

– Quality assessment of information activity in the digital environment and the level of digital culture formation according to relevant criteria.

These objectives contribute to the formation of the cognitive and procedural component of students' information culture.

The second subgoal, the formation of digital competencies, is detailed through the following objectives:

– Developing the ability to work with digital information, analyze, critically evaluate, systematize, and integrate it into professional knowledge.

– Formation of skills in using digital technologies in educational, professional, and personal spheres of activity.

– Mastering digital tools, creating digital resources, as well as developing skills for safe work in the online environment and adherence to the principles of information ethics.

The implementation of these objectives contributes to the development of reflective and active, personal and developmental components of information culture.

The third subgoal, the formation of a digital worldview, involves the following objectives:

– Development of awareness of the information culture importance as a factor of successful professional activity in the digital society.

– Formation of personal motives for raising the level of digital culture, including reflection on one's own information activities, responsible attitude to digital content, and understanding the impact of the information environment on personal development.

Solving these objectives ensures the development of value-motivational and personal and developmental components

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of students' information culture. Thus, structurally defined goals, subgoals, and objectives allow us to form the content and procedural components of the pedagogical system, which are aimed at organizing the educational process, developing interaction between students and teachers, and creating mechanisms for assessing the level of information culture formation. The prognostic component reflects the prospects for further professional activities of students and their ability to continuously learn in the digital economy.

Pedagogical conditions for the implementation of the model of information culture formation of university students are determined by the potential capabilities of the educational environment, which contribute to the effective functioning of an educational institution and the development of students' digital culture [13;14]. They include the organization of information and educational space, the use of educational communication tools, and the implementation of active learning methods that ensure the integration of students into the digital environment and promote their personal and professional growth.

The basis for determining the pedagogical conditions for digital culture formation is the development of the university's information and educational environment, which provides interaction between participants in the educational process, access to learning resources, and systematization of the knowledge acquisition process. The formation of such an environment involves engaging students in working with a wide range of digital resources, using various forms of learning, stimulating independent learning, research, and practice-oriented activities [15, p.69].

One of the key pedagogical conditions is the use of educationally significant communication to popularize modern scientific knowledge among students. In the digital educational environment, communication tools are not only a tool for interaction but also a source of information. These tools include online journals, scientific and educational blogs, professional social networks, and learning forums that provide discussion of current issues, exchange of experience, and development of critical thinking. The use of these resources contributes to the formation of students' digital

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culture through interactive forms of learning, engagement in discussions, and research projects.

Educational communication based on digital ethics and responsible information behavior also takes an important place in the development of digital culture. Online interaction between teachers and students requires adherence to the rules of digital etiquette, which includes the following components: technical literacy (checking equipment, organizing workspace), correctness in communication, respect for time and personal space of interlocutors. Mastering the basics of digital etiquette forms the worldview of students' digital culture, orienting them to constructive interaction in the information space.

The next pedagogical condition is to involve students in the development of distance education courses and the creation of digital information products. Modern learning methods are focused on the active participation of students in the development of educational content, which allows them not only to acquire knowledge but also to gain practical experience with digital technologies. The use of virtual and augmented reality technologies, and interactive multimedia resources promotes the development of a participatory culture that characterizes the digital society and forms skills in the Web 2.0 environment.

A special role in the formation of digital culture is played by the use of the scientific social networks potential to stimulate students' motivation for research activities. The digital environment provides an opportunity to participate in scientific discussions, projects, competitions, research publications, and discuss topical issues with the scientific community. Involvement of students in scientific social networks contributes to their professional development, expansion of contacts, and formation of the personal and developmental component of digital culture.

The results of the study confirm that the formation of students' information culture is a prerequisite for the development of a digital university and the effective adaptation of students to the modern information society. The information culture of students includes cognitive, activity,

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value-motivational components that contribute to the successful use of digital technologies in educational and professional activities. To ensure the effective formation of this culture, it is necessary to integrate a set of methodological approaches, including philosophical and methodological, cultural, axiological, system-activity, and contextual approaches.

The proposed model of a pedagogical system for the formation of university students' information culture is based on such principles as consistency, gradualness, continuity, modeling, structure, and practice-orientation. The implementation of this system involves the development of an information and educational environment, the use of modern means of educational communication, and the implementation of active teaching methods that promote students' involvement in independent information activities. Particular attention should be paid to digital ethics, development of critical thinking skills, and the formation of a digital worldview that ensures a responsible attitude to information activities.

The implementation of the developed pedagogical system will allow increasing the level of digital literacy and competencies of students, expanding their opportunities for self-study, and professional development in the digital economy. The use of information technologies in the learning process promotes the integration of students into the global digital environment and ensures their competitiveness in the labor market. Further research could be aimed at developing effective methods for assessing the level of information culture formation, as well as at studying the impact of the digital environment on the development of students' personal and professional competencies in a digital university.

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